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# Intangible Factors *in* Combat

Lieutenant General Raymond S. McLain, *United States Army*

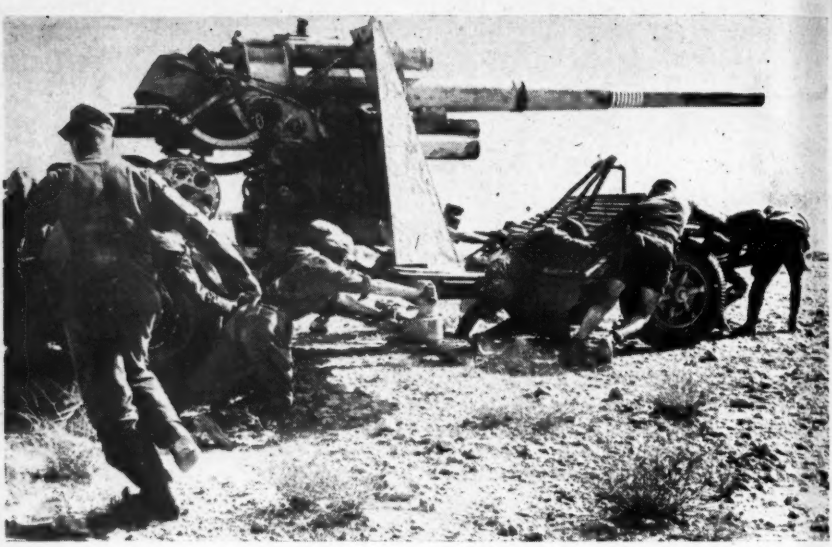
THE following comments do not pretend to cover in any completeness or in detail the subject which I have chosen. Indeed they are hardly more than thoughts on this vital subject. But, I believe they are well worth study, amplification and extension by any student of military science.

### Doctrines

Doctrines are very much akin to principles, but in an entirely different category. Like principles, they are subject to *interpretation*. It is the application of doctrines—the *knowledge* of how to apply doctrines—awareness of the point at which the ramifications of one series of doctrines has progressed into another and entirely different series; that must be determined. This interpretation of doctrines is vitally affected by *combat judgment*. Combat judgment is developed from many different sources. First, there must be the mentality, then education, and finally there must be experience. From a combination of these factors, always limited by factors of personal characteristics, combat judgment is formed. It is much easier for an officer to act in any situation, and especially in an emergency, if his combat judgment is built on the application of doctrines which have been well learned and with which he is intimately familiar. Thus, I heard many times after the initial fighting on the southern shores of Sicily that we had thrown the book away and were having a "rat-race" across the island. In actual fact, nothing of the sort was taking place. The truth of the situation, as later events disclosed, was that the Germans and Italians had been defeated and were falling back so that the nature of the operation was a pursuit. Therefore, the doctrines of a pursuit were applicable. The same situation occurred again, many times during the battle for France, after the breakthrough from Normandy and again in the battle of Germany, after the crossing of the Rhine.

Doctrines must often be changed, especially doctrines which have been set up as applicable to new weapons or new means of warfare, or to meet new means of warfare. The doctrines which were believed to be valid early in the war, that tanks would not fight tanks but would only fight infantry, proved to be incorrect. Whenever our tanks made their presence on the battlefield evident they drew enemy tanks. This was not quite true in the reverse, because the heavier guns carried by the German tanks and the heavier armor of the Tiger and King Tigers made the contest unequal. Such targets had, in most cases, to be taken by other weapons. It may now be said, however, that tanks adequately gunned will seek tanks or seek to block the advance of tanks on any battlefield.

It was believed that the tank destroyer



A German 88-mm gun.

would seek out enemy tanks and run them down and destroy them. This doctrine did not prove correct because it was found that any armor maneuvering on the battlefield was soon the victim of a concealed gun, and while the tank destroyer did do considerable maneuvering, the idea of giving chase to enemy armor was not correct. A vivid example of how armor draws armor was offered in the second battle of Aachen or the drive to the Roer. There, in about ten days of continuous fighting, the 2d Armored Division made a determined drive of about ten miles through thick mud and across three ridges of the original Siegfried Line. During this time, the division lost more than 150 pieces of armor, but drawing against its advance the bulk of the German armor in that locality, it practically destroyed three enemy armored divisions and damaged two others. It is therefore, apparent that the application of doctrines is based on judgment and that they are subject to change with a change of weapons, enemy defenses, and means of warfare.

Doctrines are sometimes based on speculative conclusions. For example, the Germans tied themselves to the doctrine that air and armor would win all of their battles. Having come to this conclusion and adopting this doctrine, they neglected artillery. The American Army had artillery. Had the German Army possessed artillery in the same proportions as the American Army, and had they been able to use it with the same facility and efficiency, it is doubtful that they could ever have been defeated. Certainly, it would have required a much longer time. Similarly, the American Army could easily have adopted a doctrine that the Germans could be bombed out of the war. We had an apparent amplitude of of means for that purpose. We also had

probably the most efficient organization that could be put in the air for that purpose. There is no discounting the great damage that air can do to an enemy, especially against his supply installations and transportation. It is possible that an enemy could become so exhausted by such bombardment as to concede defeat and surrender rather than continue to resist. But there is no question about his defeat when ground armies have overrun his positions and have dispersed or captured his army and occupied his country. The one is speculative, the other is a certainty.

### Teamwork

Great stress was laid on teamwork in this war, as well as in all other wars. Marvelous results were obtained from it. One of the great examples of it during this war was the cooperation between infantry and artillery. Another fine example, especially evident, in the breakthrough from Normandy, was the teamwork between the ground forces and fighter planes, between armor and infantry. To be sure, no special plea is needed to demonstrate the value of teamwork. What must be kept in mind is that adherence to the doctrine of teamwork should not be permitted to invalidate some of the basic principles applicable to factors in the team. Rigidity of command and routine must yield to flexibility. Thus, there was often too much inclination for divisions to fight by combat teams instead of fighting as a unit, which would have much greater power and flexibility than the power inherent simply in three combat teams. In maneuvers, there were

**155-mm howitzer, M-1.**

often lengthy debates as to when artillery should pass to the combat team commander, and when it should revert to division control. In actual practice this question became academic. The infantry regimental commander too often found that he had more to occupy his mind than he could take care of, and was very willing that the artillery commander assume the responsibility for artillery support, even at extended distances. I believe it can be said that infantry commanders universally felt that they had superior artillery support. It happened many times in my experience that the division artillery officer could very often give the regimental combat team commander better artillery support than he could himself demand. This was true for the simple reason that the artillery officer had a closer knowledge of what his artillery could do than the infantry commander could possibly have. Thus the division artillery officer would require an artillery battalion commander to occupy positions which were questionable because he knew that the risk was amply justified.

Effective teamwork is often harassed and handicapped by being tied to clearance rules. Ends must be tied together of course. But many functions necessary to an operation can become automatic, so that delay for clearance is not necessary before the main wheels begin to grind. This may become dangerous unless the commander is very familiar with the capabilities of these supporting functions.

### Morale

Although morale is an invaluable factor, it always has a veil of mystery cast over it. Generally, it may be said that the winner has good morale. Success breeds good morale. Troops like colorful leadership and they will do stupendous things when their morale is high. At the outset there may be very little difference between the ability of two leaders, but one may grasp a slight success, contribute a little color to an operation; and from then on, success is inevitable, while the other may suffer a slight reverse at a critical time and find that his machine is gradually stalling. Much has been written on morale on which I will not attempt elaboration. Basic principles of morale are always a factor, such as, good food, good arms, ample ammunition, warm clothing, but probably the greatest factor of all is leadership.

### Leadership

Leadership is one of the most difficult factors to achieve in a great army. It is no less difficult to achieve in civil life. Business, industry and the professions are all looking for leadership. There were more than 800,000 new officers made during the past world war, but there were not 800,000 natural leaders in the United States, nor in any other country in the world. To have found that 80,000, or ten per cent of this number were natural leaders would have been surprising. The 800,000 or more, who were actually selected, had many of the elements of leadership and they were successful beyond anything that could have been expected, even in this great country which probably produces more leadership than any other nation in the world. If industry, business and the professions could have, in such a short time, produced from this group of men, such an outstanding performance it would have been a remarkable thing. In lieu of adequate natural leadership, men who had the greatest possibilities were given the responsibilities. They were surrounded by routine, and many of them in a certain sense became "synthetic" leaders, carrying out orders of their superiors, following a definite pattern which had been laid out before them. They performed in channels, but if they had been called upon to exercise their own judgment, they

would have been found lacking in many qualities. Leadership cannot be produced by a hasty system of education or training. The basic factor of leadership is innate. From such qualities as are innate, leadership must be developed over a long period of time and this does not mean a year or so. It means a long period of years. The young men who were given positions of responsibility and leadership in this army had developed a large measure of whatever characteristics of leadership or non-leadership they possessed before they even entered the military service. It is a high compliment to the top leaders of our army that a great organization was put together and performed a magnificent job in defeating two of the greatest military nations that history has ever known, with a minimum of casualties that is no less remarkable.

On the question of leadership, I have heard officers of high rank express the opinion that the quality of gallantry on the battlefield might be a liability rather than an asset in these days of rapid firing guns, of high explosives and of tremendous fire power. I have heard it said that courage and heroism on the battlefield might only result in the possessor becoming an early casualty. It is my opinion, from nearly two years experience in combat, that there is no factor on the battlefield which is superior to gallantry in action, to courage and heroism. I do not believe there ever has been a greater factor; that there is now or ever will be in the future. I do not mean to say that courage will win any battle. There must be an approach to equality of means. But when all of these are balanced off, I think it will be found that more battles have been won by courage than by any other factor on the battlefield. Courageous leadership on the battlefield must apply not only to the local platoon or company leaders but all the way up to at least the corps commander. When a battalion is bogged down someone must start it. If the regimental commander fails to do so, then the division commander, or the assistant division commander, or some other officer, must step in and set the example and get the battalion moving. It cannot always be done by mandate and order. When a unit is bogged down, it is remarkable how much can be achieved by the appearance of the corps commander in the front-line battalion. It generates, very suddenly, a great deal of interest in the commander of the battalion which has been bogged down, in the regimental commander, and the division commander. Results are very often remarkable. It may be argued that a corps commander carries too much responsibility to risk such action, but it is my belief that this is not a valid argument. I have said before that top leadership is scarce, and I have seen a battalion, which had done remarkably fine work, go completely to pieces simply because the battalion commander was wounded. In the higher headquarters, qualifications become more extensive. The problem of selecting replacements becomes a difficult one. But it is very often like a case of picking the largest apples off the top of the basket and seeing only the small ones which remain on the top and which have been left in their original positions after the larger ones are taken out. It is often the case that, if a search is made lower in the basket, more large apples will be found there. When any leader, at least from a corps commander down, does not visit his front-line battalion frequently, this in itself is definite evidence that his leadership is not satisfactory. I once heard an officer say that leadership was the art of making someone do what he didn't want to do. I think he was at least ninety per cent wrong.

### Speed

Speed on the battlefield is a very important factor. It will often achieve success where other measures fail. When resistance is considerable, it must be compromised with planning and preparation. But after adequate planning and preparation speed is absolutely essential. I heard one general officer, for whom I have a great deal of respect, say that if a planned operation, such as the capture of a town, or the reduction of a strongpoint, did not show success within one hour after the assault was launched, he considered its ultimate success doubtful. In such circumstances, he said, he had often pulled his troops out and made other preparations. His division was known for its thorough planning, but I never knew it to be outdistanced in an advance against resistance.

There is validity in the assertion that courage is a liability, when without thorough planning, that courage puts men in front of an enemy amply armed with rapid fire weapons, mortars and artillery support. There is no validity to the assertion that troops which have suffered heavy losses in any particular action have demonstrated efficient fighting. Troops which storm a strong point at the loss of a thousand men are not as valuable as troops which will maneuver and capture a strong point with a loss of two or three hundred men. There is no economy in the first case, because the drain on man power

German "Panther" tanks. (Signal Corps photo.)

**Bazooka Rocket launcher. (Signal Corps photo.)**

will frequently make the unit ineffective long before the unit which takes more precautions. However, when the planning and preparation have been adequate, there is nothing which will get the job done quicker than courage and dash in carrying the thing out.

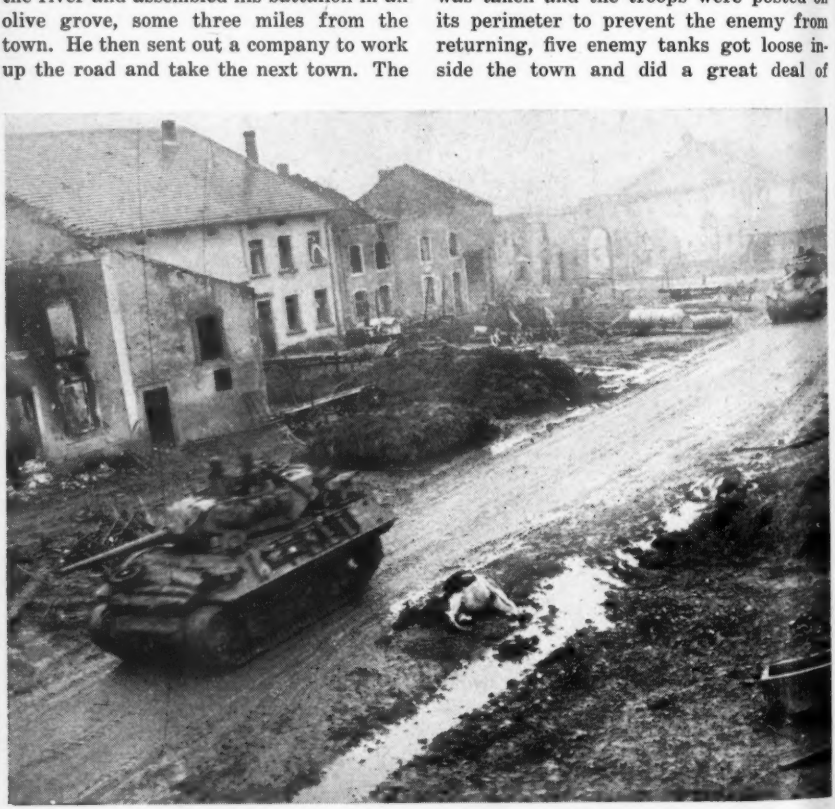
### Volunteers

Another intangible factor with which I have always taken issue on the battlefield is the inclination to think it entirely proper to carry out hazardous missions by calling for volunteers. There are always a varied number of heroic individuals in every organization; individuals who cannot resist the temptation to volunteer for every mission where their courage is challenged by a call for volunteers. I believe that a commander should always protect these courageous souls and give them the same chance that their less gallant comrades may have to return to their families and homes. It may not be possible for a commander to achieve equality in this regard altogether. It is sometimes necessary to accomplish the mission, even if it requires imposing an unduly hard burden on some courageous leader; but this should be resorted to only when fully justified by the situation. There is no point in exterminating the courageous souls of any organization, especially since the effectiveness of the organization is likely to be impaired materially for a considerable period of time.

### Supervision

Supervision is just as necessary on the

battlefield as on the maneuver field. I recall two minor operations which amply demonstrated this. The division commander had ordered the regimental commander to take a town within this zone. The regimental commander had ordered a battalion to take the town and held another battalion in readiness to take the adjacent town when the first town had been captured. Why the assault on both towns had not been made simultaneously was not clear. The battalion commander crossed the river and assembled his battalion in an olive grove, some three miles from the town. He then sent out a company to work up the road and take the next town. The company came under fire and lost two or three men. It then sent a platoon to work forward and get into the town. The platoon lost a man and sent a patrol forward. The patrol got out of sight and was bogged down and the situation remained that way for some seven or eight hours. The company finally took the town and was out of communication with the battalion. The battalion had no supporting weapon within supporting distance. The company was absolutely on its own. After the place was taken and the troops were posted on its perimeter to prevent the enemy from returning, five enemy tanks got loose inside the town and did a great deal of



American armor rolls through a French village in pursuit of Germans. (Signal Corps photo.)

shooting. Fortunately, the troops, being all on outskirts, suffered few casualties. A hit by a bazooka shell in one of the tanks persuaded them all to withdraw and head for their own line.

The other battalion later took the adjacent town and was ordered to take a hill beyond. Two companies were assigned to this task. The battalion commander had his CP in the rear and for approximately three hours the companies were bogged down at the foot of the hill which was lightly defended. The battalion commander had no mortars up to support them although the target was ideal for mortars. He was not where he could see the action, though CP locations were good. It was finally taken by four men. Had the regimental commander personally inspected these two operations he could have made corrections on the spot. There was no reason why both the regimental and battalion commanders should not have been where they could have observed and directed these actions. The leader does not belong in his CP in offensive actions.

### Fire Power

Fire power is not exactly an intangible factor because its volume and possible effect can be calculated. However, its actual effect has some of the elements of intangibility. In early wars, when the machine gun had not yet taken its place and explosives were not as well developed as at the present time, fire power was obtained by the individual riflemen and certain methods of advancing and developing and holding this fire power were worked out. In this day of multiplicity of means of procuring fire power, the infantryman should never be required, unless in very exceptional cases, to develop the fire power necessary for his advance. It can much better be developed by mortars, by machine guns using overhead or flanking fire; by artillery and by air support. The infantryman has an infinitely

**105-mm howitzer. (Signal Corps photo.)**

greater problem in working his way forward behind this fire support, and any attempt on his part to use his rifle prematurely or to secure a superiority of fire by his own means will only subtract from his effort to get forward, slow his advance and cause great casualties. He should have to use his rifle only to take out enemy that had been bypassed. Infantry which stagnates and is pinned to the ground is always a definite target for the enemy's mortar, artillery and other fire power. While a soldier is moving, the enemy is not certain where he is. When he stops he is a definite fixed target.

### Rumors

Rumors on a battlefield play an extremely important part in combat results. Thus in the battle of the Ardennes, when the breakthrough occurred, there was a great deal of concern over reports that German troops were being dropped in civilian clothes behind the lines. Actually the efforts in this regard were meager and frequently these troops which were actually dropped behind the lines were reported by civilians who were friendly to our forces, and there was little difficulty in mopping them up. This picture might have been different had we been in Germany and the civilians not been friendly to

us. Rumors spread fast and though often baseless, cause much unnecessary concern.

The phrase "88 fever" played a great part in the war by spreading among our troops the fear of this weapon. There is no denying that the "88" was a very efficient all-purpose weapon. It could serve as artillery. It made an ideal weapon for tanks and for other purposes. However, the "88" as a piece of artillery was far inferior to American artillery. The only advantage it had was range. It did not have the capabilities of a high trajectory which our 105s and our 155s had. It was not effective as direct support artillery in situations such as the mountains of Italy, and in certain localities in France and Germany. It did not have the explosive effects per shell; and, as I have said before, the Germans were unable to mass their artillery as the Americans did, so that, actually, the effect of our artillery on the Germans was many times the effectiveness of the German artillery on us, and there was no reason to have been unduly alarmed and to have created the phrase "88 fever."

The fear of armor on the battlefield was much exaggerated over its actual capability by both the Germans and the Americans, and it is true that this fear enabled armor to perform such feats as it did on various occasions. But had it not been for the fear which the individual soldier had of armor, neither side could have accomplished such results as they did with it. In the battle of Chambois, in closing the Falaise pocket, a bazooka team of two men knocked out four tanks in ten minutes with five shells. This team had never fired a round in anger before. These were Mark IV tanks, but it must be remembered that the bazooka now is a much more powerful weapon than it was at that time. The men waited until the tanks were within thirty-five to sixty yards from their position before opening fire, thus making every round count. They demonstrated the capacity of the bazooka team, lying in wait, and knocking out these very expensive pieces of ordnance with a very simple and inexpensive weapon. When soldiers are trained and become inured to the battlefield, they will realize these things and the power of the tank will be greatly handicapped.

### Will Power

The ultimate aim of an army in battle is to break the opposing army's will to fight. Troops with strong will and battle experience can withstand much if they have a reasonable means of doing their job. The German soldier has a very strong will, but that will was weakened by the easy successes achieved in France and Poland and other fronts by *blitz* tactics, where the defending forces were inadequately prepared to meet Germany's modern arms and methods of offense. It is a much greater tribute to the Americans that they succeeded in *blitz* fashion against Germans who had had their earlier experience and should have been prepared to meet *blitz* methods. The truth is that, despite this experience, the Germans were not so prepared either in the battle of France or the battle of Germany. The morale of their soldiers collapsed after the hard fighting of the American troops, but this collapse of the Germans came much sooner than it should have, and much sooner than it would have come if they had continued their resistance to the maximum of their capacity. Therefore, we can return to the conclusion that courage on the battlefield is the greatest single factor in the winning of battles and the waging of war.

# "Mobility, Vigilance, Justice"

## — *A Saga of the Constabulary*

Lieutenant Colonel A. F. Irzyk, *Cavalry*
S-3, 1st Constabulary Brigade

VERY quietly and unobtrusively a new force took control of the policing of the United States Zone of Occupation in Germany on 1 July 1946. There was no fuss nor fanfare as a brand new military organization became operational. Rather, the transition was effected smoothly, thoroughly and efficiently. The impact of this change, however, was felt at once in the entire Zone. Yellow flashes of color, characteristic of the new unit, became conspicuous all along the Zonal Boundaries and Frontiers separating the U.S. Zone from the Zones of the French, Russians, and British and from the countries of Czechoslovakia and Austria. New and brightly outfitted soldiers in their freshly painted vehicles were quickly noticed, as well, along the roads and in the towns. The Germans, Displaced Persons and American Troops immediately became aware of something new.

Just what is the Constabulary, what is it set up to do and how is it going about doing its job?

Late in 1945 redeployment had become virtually a torrent. The American Army of Occupation in Germany was shrinking at an alarming rate. The occupation, which had only begun a few months previously, had already reached a critical stage. With each passing day there was more and more to do and, ironically, less and less with which to do it. Obviously something had to be "snatched out of the hat" to save what might become a disastrous situation. It was a foregone conclusion by now that the size of the American Army in Germany would be inadequate to conform to the original idea of occupation. Therefore, it was only natural at such a realization to change the plan. It was decided that an answer to the dilemma might be the organization of a small, highly-trained, mobile unit that could police Germany on much the same basis as some of our better state police forces in the United States.

Such was the beginning of the United States Constabulary. Could this unit control Germany and at the same time keep to a minimum the number of troops needed to occupy the nation, and thus assist the Army in meeting the extremely difficult requirements demanded of it? That answer is now being prepared for the history books.

Late in 1945 the United States Constabulary as such was merely a series of ideas. Early in 1946 those ideas had climbed onto paper. By February the organization and plans had been approved. To those who had just completed weeks of arduous, gruelling work the starting line had just been reached. The words and figures and numbers were to be given life. The previously secret plans were now disclosed, and the persons and units that were to become part of the new organization dug in at once and began

to give their creation flesh and blood and a heart.

The First Armored Division and the Fourth Armored Division, both of which had had long periods of service, had won lasting fame during long, hard months of combat and had only a few months previously been designated as probable permanent occupational divisions, furnished the nucleus for the Constabulary. All ten operational battalions (three tank, three infantry, three field artillery and the reconnaissance squadron) of the Fourth Armored Division became Constabulary Squadrons. The Division's Headquarters and Headquarters Company became Headquarters and Headquarters Troop of the 1st Constabulary Brigade, the Division's Combat Command "A" became the 2d Constabulary Brigade Headquarters and Combat "B" became the Headquarters of the 3d Brigade. Similarly, battalions of the 1st Armored Division became Constabulary Squadrons and the combat commands changed to Constabulary Regiments. The balance of the units and manpower were supplied by cavalry reconnaissance squadrons and tank destroyer battalions, most of whom had outstanding combat records. Thus, the beginning was auspicious, for the backbone of the Constabularly was already rich with history and tradition.

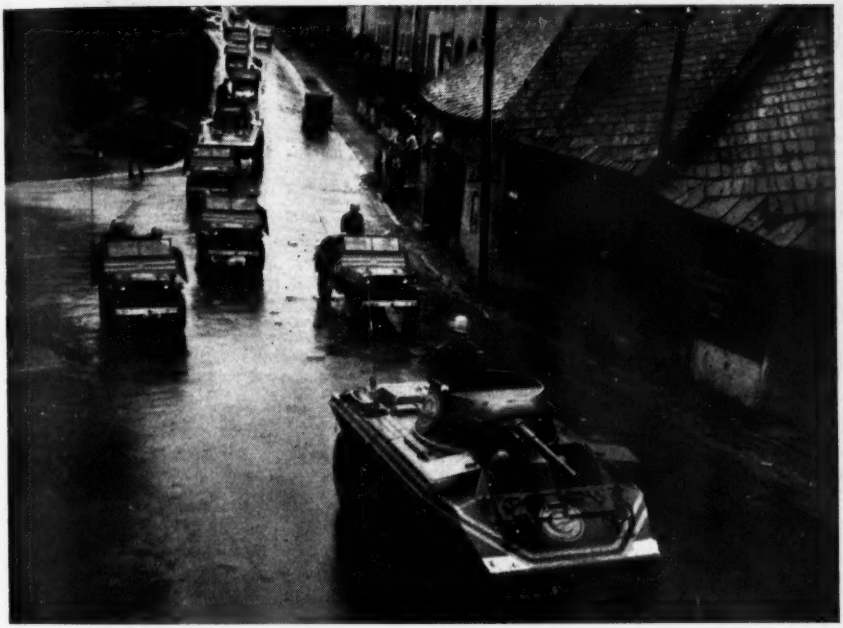
Almost immediately, however, the units were whittled down to the bone. All officers and men who would leave for home via the redeployment pipeline prior to 30 June 1946 were immediately transferred to other units. By the time the shuffle of troops was completed each organization of the new Constabulary force was down to a bare cadre size. There were few officers, men or vehicles. Despite such a severe handicap, the units, by the middle of March, began to take shape. An intensive and extensive training program utilizing the highest standards possible was embarked upon, and almost at once, signs of definite progress were noticeable. Constabulary Headquarters, outgrowth of VI Corps, began growing and functioning. This headquarters dealt with each of its squadrons directly and separately, but soon the squadrons were being integrated into regiments and later regiments into brigades. Slowly and gradually at first, this embryo of a completely new military unit, of an experimental force used to control a defeated nation took shape, found its legs, and began to take its first unsteady steps. On 1 July little more than three months later, the unit was full grown and working.

To those on the scene the transformation has been well nigh unbelievable. By its first working day, the Constabulary was a highly trained, well equipped, smartly uniformed, confident and capable organization that already had acquired a high morale, *esprit de corps* and a healthy cockiness. All this when the American Army had reached its lowest ebb in a long, long time and when practically all experienced personnel had since left for home.

Today the eyes of the multitude are upon the Constabulary. The military world, especially, is receiving its recent acquisition with much interest, for the Constabulary is unlike any other military organization. As an experiment in the policing of an occupied nation, the Constabulary has the attention of much of the world focused upon it.

### Organization

The United States Constabulary numbers today approximately 34,526 officers and men. This large command, headed by Major General Harmon, has a Chief of Staff and a Deputy Chief of Staff. Its general staff consists of a G-1, G-2, G-3, G-4, provost marshal and a public safety officer. Except for a few variations it has much the same special staff sections as are normally found in a division headquarters but more especially a corps



**A constabulary squadron on the move. (Signal Corps photo.)**

headquarters. As more and more problems are confronted, more sections are being added, and as a result, the headquarters is still being expanded.

Within the headquarters in addition to the headquarters and headquarters troop, are special troops consisting of a signal squadron, a band, a school squadron, a military police company, a car platoon, an intelligence detachment, a counter-intelligence corps unit and a representation from the criminal investigation division. Attached to the Constabulary is a special service company and an ordnance medium maintenance company, and in support is an Air Liaison Squadron.

The Constabulary, except for its headquarters and supporting troops, is divided into three Constabulary brigades, the 1st, 2d, and 3d Brigades. Each brigade has a headquarters and headquarters troop and its staff generally parallels the Constabulary headquarters staff except to a smaller degree. A brigadier general commands each of the three brigades.

Under each brigade are three Constabulary regiments. Each has a headquarters troop consisting among other things of a horse platoon with thirty horses and a motorcycle platoon with twenty-five motorcycles. A service troop and a tank troop equipped with the latest light tanks complete the regimental headquarters organization.

Three Constabulary squadrons are an integral part of each regiment. A Constabulary squadron has six troops: a headquarters troop, three mechanized troops and two motorized troops. Mechanized troops have already proved themselves

more suitable for constabulary operations, and because of this factor, the motorized troops have recently been furnished with additional vehicles in order to make them as mobile and as effective as the mechanized troops. Except for the tanks that are a part of regimental headquarters, all the operational vehicles are either "Jeeps," M-8, or M-20 armored cars. A quick glance will show that the operational units of the Constabulary consist of twenty-seven squadrons, nine regiments and three brigades.

Since the Constabulary covers virtually the entire U.S. Zone of Occupation, its units, of necessity, are widely scattered. Brigade headquarters are located at each of the three *Land* (state) capitals. The 1st Brigade is located in Wiesbaden, capital of Greater Hesse; the 2d Brigade is at Munich, capital of Bavaria; while the 3d Brigade is at Stuttgart, capital of Wurttemberg-Baden. Brigade areas conform generally to *Land* boundaries while squadron boundaries usually follow *Kreis* (small German country) boundaries. Each squadron, however, controls several *Kreise*.

### Mission

The mission of the United States Constabulary, as stated in the formal, direct and businesslike tone of its directive, is to "maintain general military and civil security; assist in the accomplishment of the objectives of the United States Government in the occupied U.S. Zone of Germany (exclusive of the Berlin District and Bremen Enclave), by means of an active patrol system prepared to take prompt and effective action to forestall and suppress riots, rebellions, and acts prejudicial to the security of the U.S. occupational policies, and forces; and maintain effective military control of the borders encompassing the U.S. Zone."

### Operations

To accomplish its assigned mission the Constabulary mans border posts on the interzonal boundaries separating the U.S. Zone from the zones of the French, Russians and British and on the frontiers separating the U.S. Zone from Czechoslovakia and Austria. Intensified patrolling is done within a 1000 yard band along the boundaries and borders by foot, horse and vehicular patrols. To give further security in depth, intensified patrolling is performed by vehicular patrols within a band extending ten miles from the boundaries. Additional vehicular patrols operate constantly throughout the entire area covering hundreds of thousands of miles each week. The patrols periodically cover every road and check every town, village and hamlet.

Although border control and area patrols constitute two of the major types of operations, the mission of the Constabulary requires a host of others, all of vast importance. In order to discourage and suppress speeding which has caused so many fatalities in Germany, a network of effective speed traps is operated with spot punishment meted out to offenders by roving Summary Court Officers. Some of the most outstanding examples of the Constabulary in action have been its "search and seizure" operations. Such acts commonly referred to as "swoop raids" are levelled at areas or points where known or suspected illegal activities exist.

After much careful planning, the raiding force usually hits its objective at first light when the persons affected by the raid are still in their last moments of slumber. Surprise is essential to success and usually is obtained.

Still other functions of the Constabulary are the setting up of check points and road blocks, operating railroad check points and operation of Constabulary stations.

Check points and road blocks are brief affairs that constitute an extremely effective "spot check." The check points are set up without warning for approxi-

mately a half hour at crossroads and on roads. The purpose is to examine the credentials of every traveler that passes that point while the checkers are at work. The principle here is again surprise, and after the post has been operated a short time, and by the time the word is beginning to get out, the check point moves to a new location.

Railroad check points differ from road check points in that they are of a permanent nature and are operated just inside a border. They check every train that is entering the American Zone or departing from it. Both passengers and baggage come under the scrutiny of the troopers.

Constabulary stations are a recent development. They are merely a Constabulary office manned permanently by six or eight men in or near an area that is considered troublesome yet which has no Constabulary Troops stationed in it. The station will provide Germans and American troops alike with a source to contact when giving or securing information or in the event of an emergency. (The Germans have long since ceased calling the Constabulary, "Harmon's Gestapo," for they realize that the Constabulary is interested only in the protection of the law abiding and the apprehension and prosecution of transgressors.)

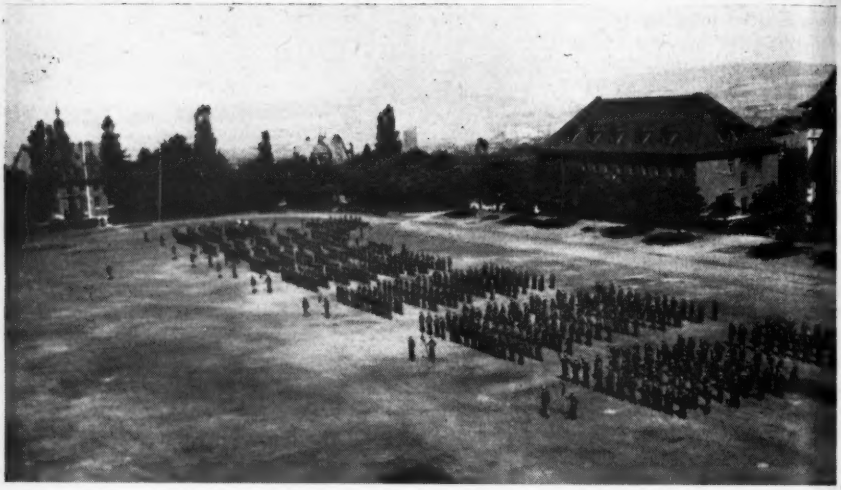
### Experimentation

Continually experimenting, the Constabulary, on 1 July for example, took over border control from infantry units which it relieved, and troopers continued operating as all units before them had done. The border until that time had been controlled by static posts which in most cases covered roads. The posts gained the desired results only in the immediate area of the post. Prospective border violators quickly learned the locations of the posts and simply detoured them and invariably found an open spot to use

**A "Black marketeer" is caught. (Signal Corps photo.)**

in their crossing, for soldiers on post were tied closely to the restricted area of their post. (It is an impossibility to completely "close" the border.) Three weeks of experience quickly proved that static posts on the border were not the answer to most effective control of that border. The plan was changed at once to make provisions for foot, horse, and vehicular patrols that operated parallel to the border and in depth. The patrols are dispatched at irregular intervals over changing routes. Static posts have not been entirely abandoned but are still maintained in key places and on main roads. As a result, border violators never know when they will come upon a Constabulary patrol with troopers on the alert for just such individuals. The line of demarcation where border control ends and area security begins is difficult to decide, for many border violators are picked up well into the interior by vigilant patrolmen.

The Constabulary has experimented with all methods of operation in its constant quest for the "approved solution." It has tried performing its tasks with vir-



**Inspection at Wetzlar. (Signal Corps photo.)**

tually all its troops employed and conversely, it has operated with a good sized force in reserve so that a policy of frequent rotation could be used in order to keep a program of review training constantly in effect, and to prevent the heavily extended troops from growing stale.

The risk of loss in administrative control in favor of added operational effectiveness was taken and small units of platoon size were placed in widely scattered areas in an effort to cut down on "backtracking" of patrols, and to have Constabulary personnel available in all localities. Sometimes before, the experiment in effect was the concentration of all non-operational troops in one locality, in an effort to strengthen administrative control. This, of course, weakened in a certain extent the operational effectiveness. Gaining valuable knowledge by its intelligent experimentation, the Constabulary is presently operating under a plan that combines the best features of all the plans that they have tried to date. The end is not in sight, however, as it is contemplated that at least one more shift will be made.

### The Constabulary University

Much credit for the success of the Constabulary to date must, of necessity, go to Sonthofen. Sonthofen, as all men of the Constabulary know, is the Constabulary University, the institution that gives selected Constabulary Officers and men their Constabulary Bachelor's Degree. The school sits on the crest of a small hill overlooking the town of Sonthofen approximately ninety miles southwest of Munich. Constabulary students today study in the same classrooms where not too long ago the cream of Hitler Youth trained. Sonthofen School, originally a preparatory school for the National Socialistic Ordensburg, was constructed in 1937 under the direction of Dr. Robert Ley and Baldur von Schirach, cost $26,000,000 but was never completed. This school is surrounded by the Algeau Alps, and provides its classes with every imaginable facility. Each month

Sonthofen turns out a little less than a thousand trained officers and men. The Constabulary's field grade officers take an abbreviated course lasting five days. Company grade officers and enlisted men are provided with a fully-packed four weeks course that, General McNarney has said, "surpasses any previous military conditioning program." The school's curriculum consists of four courses: a basic course for officers and enlisted men and three specialized and technical courses for enlisted men—the communications course, the investigator's course and the desk and records course.

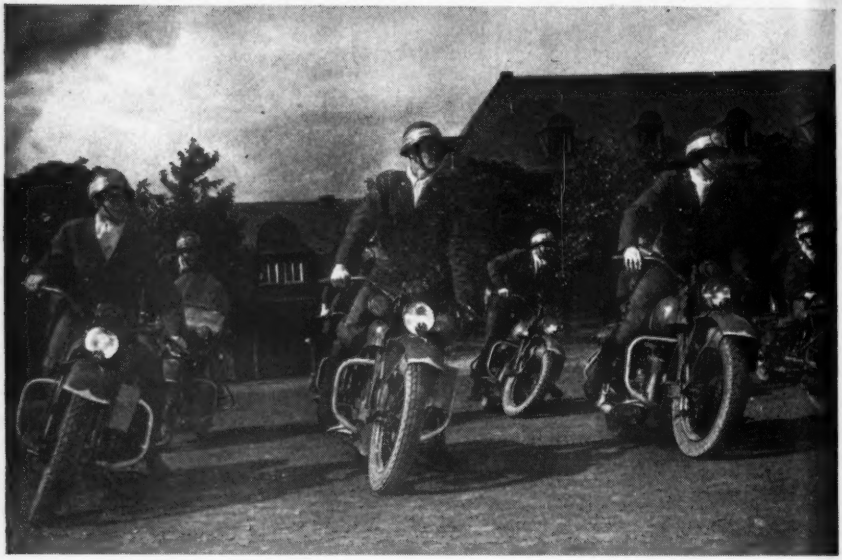
Each month, special trains start at the extreme ends of the U.S. Zone and converge upon Sonthofen picking up students all along the way. After they reach the school, the students are presented with a course of study that has rarely been equalled in Army training. Courses are thoroughly planned, effectively organized and are expertly and interestingly presented by as competent a staff of military educators as could have been assembled. Subjects include not only the normal military subjects such as maintenance, driver training, leadership, weapons, map reading and tactics, but include a host of subjects called "Constabulary Subjects." These include: passes and permits; technique and mechanics of arrest; operation of desk and records section; interrogation, confession and statements; evidence; rules, collection, preservation; traffic control and accidents and many others. The trooper's education is completed with the study of general subjects of vital interest such as: History of Germany; Potsdam Conference; Military Government; U.N.R.R.A. and Displaced Persons; International Relations; and German Courts, Laws and Political Parties. As can be seen, the education provided by the Constabulary School is varied and complete. The training must equip the school's graduates to be able to meet the great demands made upon them.

### Scope of Operations

The scope of the Constabulary efforts is tremendous. Its requirements keep it constantly sprinting with all the speed it is able to muster. An illustration to indicate the magnitude of the Constabulary effort is the vehicular and pedestrian bridge and the railroad bridge that cross from the city of Mainz in the French Zone to the American Zone. On the former the papers and credentials of 25,000 persons were checked on a single day, while on the latter it is customary, on an average day, to check the passes and baggage of 12,000 individuals. By multiplying those two routine instances by many score, one is able to gain some realization of the tremendous responsibility of the Constabulary today.

The men of the Constabulary are not burdened with static commitments such as the guarding of prisoner of war camps, civilian internee enclosures and other vital installations. Such tasks are taken over by the few infantry units that still remain. It is the job of the Constabulary, however, to contact periodically (as often as once every three days) the town mayors of all towns, military government detachments and headquarters of U.S. Troop units in the Constabulary areas of responsibility. It is hoped that such close liaison will provide the Constabulary with all the information it requires in order to perform its mission. One of the especially bright features of Constabulary operations is its utilization of German police. Cooperation between the two is good and is becoming progressively better. In very many instances the troops are working side by side with Germans with the latter giving valuable service.

One will quickly agree that the operations just discussed are quite a mouthful. What manner of men are they that are ac-



Motorcycle patrol starts out. (Signal Corps photo.)

complishing or attempting to accomplish such an extensive task?

### Youth and Inexperience

Today, the United States Constabulary consists primarily of young, inexperienced men. Most of them have had only a short period of overseas service, and their total time in the Army is extremely short, as well. Although approximately seventy-three per cent of the troopers are Regular Army men, one does not often see men with decorations or overseas stripes in the Constabulary. Many of the Regular Army men enlisted for a year or eighteen months, and already the enlistment is nearly completed for a large number of them. Many are already in the process of departing for home.

What is perhaps the most outstanding characteristic of the Constabulary is its youth. The average age of the Constabulary Trooper is twenty-two, which would indicate that a very high percentage are eighteen and nineteen years of age.

Since most men who today are assigned to the Constabulary have such little service, they must receive immediate training and indoctrination. Thus, the training of new men is a constant, important part of the Constabulary program.

It has long been assumed that top notch Noncommissioned Officers are the backbone of the army. "Old Army Non-Coms" are conspicuous by their absence in the Constabulary as in the rest of the Army overseas today, which places a tremendous burden upon the officers and upon the young enlisted men who must assume important jobs without the experience or training necessary to handle them adequately. Similarly, technical specialists which make an Army operate and function are sadly lacking. This has caused a critical situation. Radio operators, radio re-

pairmen, mechanics, typists, and the hundred and one other specialists that pump blood into the heart of an Army are an extremely scarce commodity, indeed.

Yet, the Constabulary today is doing an outstanding piece of work as is attested by the many units and agencies which are in a position to observe or work with it. The Constabulary Troopers have an air about them and a record of accomplishment that already sets them apart from most other military units.

### Uniform

In order to distinguish the Constabulary and to add luster to its appearance the troopers are uniquely uniformed. Yellow is the Constabulary trademark. The Troopers' helmet liners have two bright yellow stripes around them with the Constabulary patch on the front, they wear yellow scarves when on duty and in special formation, and even the vehicles hold their own, for they, too, are hugged by wide yellow stripes. Sam Browne belts, new leather boots and visored caps are soon to be issued to all men in order to make the trooper as natty a soldier as there is today.

### Lightning Bolt

The Constabulary like a young child is ever restless, never satisfied. Filled with the determination to do the best job possible, it constantly keeps its eyes and ears cocked for new ideas and new improvements. During a few months of operations it has profited tremendously by experience. Operational exigencies have found wanting the framework upon which the Constabulary was built. As a result, a program is presently underway to attempt to make changes in Tables of Organization and Equipment so that the Constabulary will be so equipped and so organized as to be able to accomplish ever better the task before it.

Thus, the unit with its well-hidden nervousness and perhaps misgivings with which it started is now well established. Still feeling its growing pains and sometimes overzealous in its eagerness to make good, the Constabulary is making now and again an inevitable mistake. No one doubts but that the Constabulary is definitely here to stay. And today all over the U.S. Zone of Germany law violators are more skittish, less confident, and less eager to take a chance; law-abiding German civilians are breathing more easily; American and German drivers alike invariably ease up on their accelerators as a Constabulary patrol passes; and the Constabulary is again showing the world that an American can soldier without being pushed by a war.

And thus in Europe today the flash of the "Lightning Bolt" no longer portends a storm, but is greeted as a good omen, for the words "Mobility, Vigilance, Justice" are no longer simply words or even an expression, slogan or motto, but now represent a distinct policy, a manner of operating, a characterization of the performance of the United States Constabulary.

# Reminiscences *of the* China Theater

Colonel George Wilfrid Hibbert, *Coast Artillery Corps, Reserve*
Formerly, G-2, Service of Supply, China Theater

ORGANIZATION of the China Theater in November 1944, was a confirmation that the preliminary efforts of the Allied Forces in China, India and Burma had been successful in blocking the advances of the Japanese into India, in obtaining a land route for supplies into beleaguered China, and in sustaining the morale of Chinese Forces wearied by eight long years of resistance.

This China Theater, which was the site of probably the most fantastic military operation by the United States Armed Forces was bigger than all of Europe. General Marshall said in his report that "the Asiatic operations had been maintained at the end of the most precarious supply lines in history."

India was used as a supply base with all her ports receiving supplies destined for use against the Japanese then in Burma and occupying a large part of China, including all its coastal ports. China was completely blockaded from all sides with only the highest, toughest mountains in the world affording a gateway from India. From Los Angeles to Calcutta required approximately seventy-five days sailing time. It took several more days for railroads of various gauges to handle the supplies from ports to air bases in the northeastern province of Assam. Then followed the difficult job of flying the stuff over the hump of the Himalayas into China.

When the final cargo flight was made over the "hump," the Air Transport Command announced that from 1 December 1942 to 1 November 1945 its planes had flown 776,532 tons of supplies into China.

How difficult these operations were, due to the rugged country, fierce and unpredictable weather conditions, and certain combat hazards from Japanese aircraft based in Burma, may be read in the Air Transport Command casualty reports. There were 594 planes lost in this period. The human toll was 910 crewmen and 130 passengers killed or missing. Yet two years of supply to China, extremely important and valuable to the total war effort, was less than the tonnage of most single convoys which made the journey to Europe.

Under such conditions advance planning was of utmost importance. Most of the supply was gasoline and bombs for the 14th United States Air Force based at Kunming. This smallest of American Air Forces, limited in size by available supply, virtually eliminated the Japs from the air over China and sank more than 2,000,000 tons of Japanese shipping along the China Coast. These air fighters were the only complete combat units the United States Forces had in China. All ground troops were assigned to instruction, liaison, services and supply. Of course, they were so closely integrated with the Chinese Forces that many

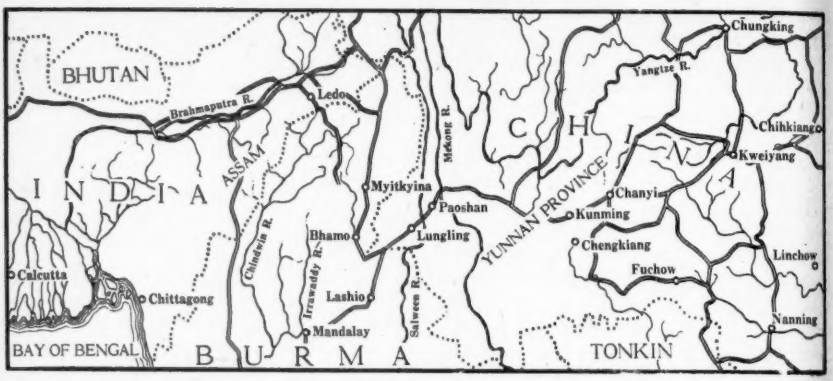
of these troops accompanied the Chinese divisions right into battle.

China had a nominal force of 5,000,000 men under arms. When the calls upon the manpower of the Allies were so urgent for operations in North Africa, Italy, for the big invasion of Normandy, and for the vast island-to-island battle in the Pacific aimed at the heart of Japan, few could be spared for the task in China, important as it was. At Kunming in May 1944, just as the Chinese attack at the Salween river was getting started, and the way was being cleared for the Ledo road into Myitkyina in Northern Burma, there were about 35,000 troops of all kinds in this American effort in Free China. Never did the total get above 70,000, and half of these troops were in Air Force units. American Air Forces in China were the only air forces the Chinese had, with the exception of one Chinese-American Wing integrated into the 14th United States Air Force. Thus the Chinese had the ground force manpower, ill-trained and poorly equipped though it was, plus a small hard-hitting air force furnished by the United States Army.

The big problem was supply. Supply to China was basically a matter of communications—ships, railroads, highways, airports—and the facilities with which to operate them.

Distance was the one item which was abundant in China. It was 1,759 miles

**Calcutta harbor dock facilities being expanded to receive supplies. (Signal Corps photo.)**




**China and India.**

from Calcutta to Kunming, part way by railroad and part by road. The Stilwell road, which was opened up as a land route, visioned early in the war, included the Ledo road, built through disease-infested jungle and difficult to maintain during monsoon rains, and the reconstructed Burma road, climbing over 8,000 foot mountains—a hand-hewn, tortuous, mud-bound, stone road that in many places was suitable for one-way traffic only.

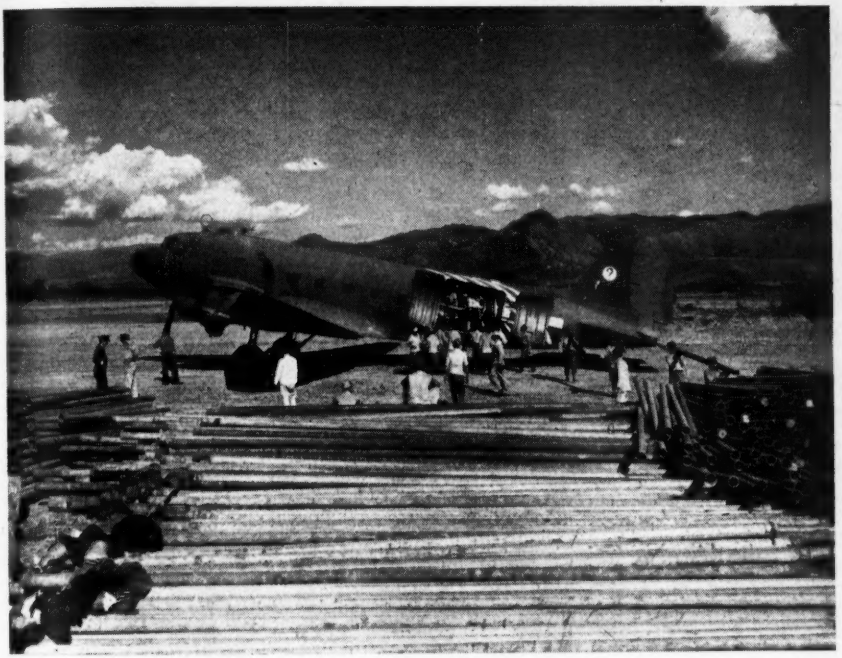
Nevertheless, when the Japanese were driven out of Northern Burma and southern Yunnan province in China by military operations on either side of the spur of the Himalayas which extends down into Burma, the road to China was opened and the first convoys rolled into Kunming in February 1945.

Soon followed the completion of the 4-inch military pipeline from Calcutta and Chittagong northward into Assam and thence southeast along the Ledo road into Burma, and then again north and eastward along the Burma road into China. The pipeline was accompanied by the first wire communication between India and China—a telephone line to check and regulate the transmission of oil and gasoline through the pipeline.

While puny in their real effect on supply in relation to the big requirements of the Chinese troops, these facilities did much to raise the morale of the Chinese people, and to demonstrate the power of the Allied Forces to conquer any obstacles in their way, and thus add to the supply facilities in the China Theater.

With the change of command in the China Theater, it seemed that a totally new spirit of cooperation and close integration between the small United States Forces and the Chinese Army was created. There would now be offensive fighting to aid the Chinese in changing from a defensive, space-for-time trading force into a compact, effective, driving force which could defeat the Japanese, cut their land corridor, and eventually open a port on the China Coast. A combined Chinese-American staff was established and the Chinese effort was centered around thirty-nine picked divisions; then the Americans and Chinese planned a campaign which stopped the Japanese at Chihkiang in April-May 1945, and paved the way for the offensive towards Liuchow aimed at opening a port. This drive was within two or three weeks of its goal when VJ-day came.

Kunming is an ancient, walled city. It



**Unloading pipe from a C-47 in southwest China. This pipe was used in constructing the pipeline from India. (Signal Corps photo.)**

was the terminus of the meter-gauge railroad from Hanoi and Haiphong in French Indo-China and, therefore, was the capital city of an area in which the French commercial and cultural interests had been strong for a period of forty years or more before World War II. It was the backdoor of China. Chinese from Shanghai, desiring to visit the city, would have to go by ship or rail to French Indo-China and then come back into their own country over this meter-gauge railroad which climbed through the rugged mountains.

There was only a single road which could be traveled by truck through this area—the Burma road and its extension east of Kunming to the Chihkiang region. It had a branch from Kweiyang to Chungking to the north and another branch southward to Liuchow and Nanning. Ferries, bridges, and road structures were primitive.

Kunming was not only the headquarters for the 14th Air Force but also the headquarters for the Services of Supply, United States Forces; Tactical Headquarters, United States Forces; the Chinese Combat Command (the United States Liaison and Advisory agency), and the Chinese Training Center (a provisional school organization for training Chinese officers and troops). Likewise, it was for a time the headquarters of all Chinese Forces in the Field.

Necessarily there were many installa-

**A section of the Burma Road east of Kunming. (Signal Corps photo.)**

tions. Chinese furnished land, and in some cases, buildings for housing troops, supplies, and equipment. In some cases, barracks were built out of local materials by Chinese contractors. Local supplies of food were purchased and processed for the United States Forces by Chinese organized in the War Area Service Corps. Care was taken to use wheat flour brought from Szechwan province so as not to disrupt the rice economy of the district.

Chinese Service of Supply was aided in developing a new ration designed especially for Chinese troops to use available local foodstuffs. The Stilwell road brought in about 17,500 motor vehicles contrasted with the 3,500 worn-out and battered Chinese trucks which had constituted the total available highway transport before the land route was opened.

The disposition of supplies, trucks, gasoline, tank farms, buildings, and the evacuation of manpower was a problem that faced the Services of Supply within a few weeks after the victory over the Japanese. There were also other problems. First was the responsibility for taking care of prisoners of war, internees, and other Allied Nationals recovered from Japanese prison camps. Second, it was necessary to aid in the transport of trained Chinese troops to areas where they could take over the surrender of the Japanese for many years. Third, there was the necessity for reducing forces and getting high-point men home to be demobilized as rapidly as possible.

The Services of Supply in China had been organized into district units, and it was the stated objective of the Commanding General to give each district commander complete authority and a certain degree of autonomy in working out the supply problems in his area. Many times the Commanding General emphasized that the staff at Kunming was there only to serve these district commanders in the field.

The line of communications originally stretched eastward from Kunming about 500 miles to Chihkiang with intermediate

**Chinese workmen use American tools to widen the Burma Road. (Signal Corps Photo.)**

district commands at Chanyi, end of the rail line from Kunming, and Kweiyang, junction point from the road to Chungking. As operations progressed in the summer of 1945 the Chanyi district headquarters moved to Nanning and the Kweiyang district headquarters went down to Liuchow, the general direction of movement being southeasterly.

West of Kunming there had been various geographical set-ups but the final district was centered about Paoshan.

Small operations south of Kunming were cleaned up rapidly as the evacuation program got started. Most of the activity had been around Kaiyuan connected with Kunming by a remaining part of the rail line to Indo-China.

Each of the district commanders was given a mission to round up any displaced persons, internees or prisoners; to recover all bodies of American personnel interred in their areas and ship them to Kunming, to assist the movement of the Chinese armies toward Shanghai and Nanking, and to turn over property to Chinese units as rapidly as possible.

The next phase was to reduce all personnel to the strength of a residual team. Many of the men were transferred out of China to India-Burma as units. High point men were transferred into the units and low point men transferred out. The

**First convoy to China passes through the gates of Paushan, China. (Signal Corps photo.)**

final task was for the residual teams to dispose of property, close out leases and contracts, and complete all records. These residual teams were designed to fit the job in the estimated time. In some instances they were composed of twenty to forty officers and men, though some teams were smaller.

It was the theory of the Commanding General of Services of Supply that most of the property in China was there to aid the Chinese, could be inventoried, delivered to Chinese units properly designated to receive it, and all questions as to terms could be settled through diplomatic channels later.

For the purpose of evacuating personnel a special camp known as Camp Ting Hao—Chinese equivalent of "very good" or "okay"—was established in Kunming, near the air base, on a site which had been improved in connection with a planned expansion of the 14th United States Air Force. Every effort was made to make this camp a model for service to the American soldier saying "good-bye to China." It was well-located on hilly ground with good drainage. Special effort was directed to good food service. It had the first potable running water which could be used out of the tap, without boiling, in China. Recreation facilities were emphasized. It was well-staffed with personnel to process men quickly in and out of camp. All available air transport was placed at the disposal of this troop movement, the 14th Air Force evacuating much of the air personnel directly from a satellite base near Kunming thus avoiding congestion in the city.

It was early in September that first steps were taken to set up the tent city at Camp Ting Hao. By 25 October 1945 more than 35,000 American soldiers had been processed through that port of embarkation and lifted by air over the more southerly "hump" route to camps in India. Planes flew out night and day with well-scheduled regularity and complete loads.

At that time there were only 3,045 American troops left in southwest China. Of those, about 1,000 were destined to go to Shanghai to fill requirements of the Shanghai Base Command and about 650 were due to stay from one to two months as members of the residual teams.

Practically all the residual activities were cleared by the end of 1945. That was the orderly end of the toughest supply task ever faced by American Arms.

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**The Asiatic operations had been maintained at the end of the most precarious supply lines in history. The efforts of the United States service forces to strengthen them were prodigious. United States port battalions at Calcutta worked in intolerable heat and humidity with native labor weakened by disease, heat, and famine. Despite these handicaps, they established records exceeding those of every other military port in the world for quick unloading and turn-around of our ships. At the same time, the capacity of the tiny Bengal-Assam Railroad was more than doubled by American railway battalions which refused to let the disease and heat of the steaming Brahmaputra Valley dissipate their energies as they have weakened white men and brown for centuries. During 1943 and 1944 the flow of United States arms and matériel through Calcutta and up the valley had become great enough to support not only the Herculean job of building the Ledo Road and destroying the Japanese forces in its path, but to increase steadily the capacity of the Himalayan air route and the flow of arms to the undernourished armies of China.** *General of the Army George C. Marshall*

# Naval Staff Organization

Rear Admiral Miles R. Browning, *United States Navy* (Retired)
Former Director, Naval Section, Command and Staff College

## Background

HISTORY offers no record of any naval staff afloat prior to the voyages of Christopher Columbus, in the closing years of the fifteenth century. Up until that time, when two or more ships were operated in company, the senior captain—or the Admiral, if one were present—was in charge as the officer in tactical command (the "OTC"), *but* he was bound by the majority decisions made by his ship captains in council. Such councils were frequently held, not only while the vessels lay at anchor, but also while they were cruising at sea. Signals, as we know them today, did not exist then, but a primitive code was usually devised in each tactical group, whereby the showing of a flag, or a light at night, or the firing of a gun, etc., signified the calling of a captains' council or the execution of some action or maneuver which had been agreed upon previously.

Manifestly, in those early years, the scope of the command functioning of the flag officer in command, or the OTC, was confined to the most elementary and limited form of operational control of the vessels of his force. The administrative control, management, logistic support and accounting, etc., of the navies of the world were carried on ashore by boards or secretariats which functioned in a manner basically similar to, for example, our own Navy Department.

Christopher Columbus was the first fleet commander who introduced any trace of naval staff functions afloat. This was due, in the main, to the unique position which he occupied in naval annals, in that his commission from the Spanish throne gave him a dual status as a commander. He was invested with the title "Captain General of the Fleet," giving him the authority and functions of the OTC, and with the additional title of "Admiral of the Ocean Sea," under which grandiloquent appellation he performed the duties of a temporal vice-regent in those areas which he "discovered" for the Spanish crown. He was, thus, both a Fleet Commander and a Theater Commander. As the former (Captain General of the Fleet), he conducted his ships under the time-honored system of holding councils of his captains, but he introduced the new practice of having a clerk present to record the proceedings. This clerk was also charged with recording history as it was unrolled by the activities of the Fleet in its expeditions—in other words, he kept the "war diary." As the Crown's temporal vice-regent (Admiral of the Ocean Sea), Columbus administered his affairs with what was, for those times, a considerable "special staff" of technicians, including a geologist, a diplomatic representative, various church dignitaries, and a number of individuals especially trained for handling the problems of ocean trade and civil relations in the area where he planted the Spanish standard and the cross of the church.

The great Genoese explorer's innovation of employing a clerk to record the minutes of his captains' councils was widely adopted by flag officers of other nationalities, and it rapidly became a standard procedure throughout the navies of the civilized world. As time went on, and the numbers of ships in tactical groupings became larger, the functions of the clerk crystallized into reducing to writing the agreements in the council meetings. These agreements, so recorded, were expressed as the desires of the OTC. As the latter gradually took over more command prerogatives, the writings of the clerk became, in reality, outlines of the OTC's operational plans and orders. The British Admiral, Lord Nelson, operating in the closing years of the eighteenth century, some three hundred years after Columbus, employed his "Admiral's Clerk" in precisely that fashion. After a council of his captains, Nelson would have his clerk prepare and distribute his battle plans. His order for the action at Trafalgar in 1805, which remains a classic to this day, was so processed. The Admiral's Clerk, born under Columbus and matured under Nelson, was the prototype and ancestor of the present day "Flag Secretary"—a key officer who is found today on every naval staff afloat and whose principal functions have never been basically altered.

Nelson contributed another and even more significant advance to the art and practice of naval tactical command and, hence, to the development of modern naval staffs afloat. He was a profound student of, and experimenter with, coordinated maneuvers by the huge and clumsy ships-of-the-line which made up the battle fleets of his era. In this field, he devised a system of codified signals, using distinctive flags and pennants flown from the flagship, to initiate and control simultaneous ship movements within the fleet. Furthermore, he made the additional step of vesting the responsibility for displaying these signals, in accordance with his orders in action, in an officer who became known as the "Flag Lieutenant." This latter officer, being directly attached to the Flag Officer himself, became his personal aide. The "Flag Lieutenant and Aide," whose genesis we have just traced, is, to this day, one of the key officers in every Flag Officer's staff afloat. His functions have been expanded since Lord Nelson's time, but the duties of handling tactical signals and of personal aide remain basic in them.

It was, likewise, in Nelson's time—about the beginning of the nineteenth century—that the problems of supply and maintenance of ships and crews in cruising fleets began to require of the OTC a considerably greater measure of attention and control than had been needed in the past. Large scale and protracted operations remote from home waters were on the increase. These were accompanied by the need for more direct measures of logistic support than had been provided formerly by the naval secretariats at home. The problems were beyond the OTC's capacity to handle without assistance, so the custom developed of employing the captain of the Fleet Flagship, ex officio, as a sort of Fleet Maintenance and Logistics Officer. Here, we find the embryo of the modern naval G-4 or N-4.

Before leaving this brief glimpse into the infancy of naval staff functions, it should be noted that the practice of using the flagship captain to assist the Flag Officer in the discharge of his rapidly multiplying duties was expanded to a point where he became designated in many navies as the "Fleet Captain," and performed functions which approximated many of those of the Chief of Staff in modern times. He also was charged to some extent with the duty of training the fleet in battle tactics—an assignment which vested him with some resemblance to an Operations Officer or a G-3 or N-3. As lately as World War II, we can find instances of this use

of the flagship captain—particularly in cases where flag officers were, for one reason or another, temporarily without adequate numbers of experienced officers on their staffs afloat.

### Staff Organization in the United States Navy

The U.S. Navy has no officially prescribed standard staff organization or procedure. U.S. Naval Regulations stipulate only that there shall be an Operations Officer and a Communications Officer, together with such other officers as the Commander may consider necessary. The Regulations do add, however, that, if an Assistant Chief of Staff is included (authorized), he should be the head of the Operations Division or Section—in other words, the Operations Officer. Thus it may be seen that the Commander is given extremely wide latitude in organizing and manning his staff and that the only important restriction placed upon him by the Regulations or the Navy Department is the availability of suitably qualified personnel. There is, of course, the additional factor of availability of accommodations in the form of living and working space on board a naval vessel; a consideration which we will have occasion to mention again later in this discussion.

The U.S. Navy does not follow the general staff system which is utilized in the U.S. Army. Consequently the Navy has no special corps of officers or men who have been specifically trained in general staff duties. It is normal practice to order key officers to staff duty upon the personal recommendation of the Flag Officer concerned and without regard to any special qualifications which the individual may, or may not, have to fit him for the duty. During World War II the demand for officers of the regular navy to fill command billets, or other jobs requiring long service background, was so continuous and heavy that Flag Officers' requests for specific officers by name to serve on their staffs frequently received somewhat cavalier treatment back in the Navy Department; however, with a return to more nearly normal conditions, it may be expected that the personal nomination system will regain its place.

Common practice and the usage of many years have combined to produce a certain degree of unofficial standardization in the staff organizations (and in the duties of the more important officers on them), of the various command echelons in the Naval Establishment. Similarly, staff procedures in administration and in the conduct of operations have taken on some measure of uniformity.

Lest the reader acquire too sharply the impression that U.S. Naval staffs are altogether haphazard agglomerations, it should be pointed out that the conditions under which naval forces must operate are such that staff organizations must be highly flexible to handle swift and sometimes unpredictable changes in the major problems to be met upon the spot. Under any conditions, the responsibility of a military or naval commander fall under one or the other broad heading of, (a) operations, or, (b) administration; but the immediate activities of the command, and the circumstances under which it is operating, dictate which of these two functional fields shall be paramount at any given time. In the conduct of naval affairs, the shift in emphasis from the one to the other is both more sweeping and more frequent than it is in any other military sphere. Particularly during war, long absences of the fleets and forces from their bases, together with the imperative necessity for abstaining from radio communication while cruising at sea, render impracticable the performance of any considerable part of the normal administrative duties of command. During such operations, for example, the functioning of the Personnel and the Logistic elements of the Fleet (or

Task Force) Staff are at a minimum. This is in direct contrast to the activities of their Army Staff counterparts during Army field operations. Similarly, many of the specialists of the naval staff are confronted with a relatively slack period while the command is cruising at sea; there is no opportunity then for the circulating contact, inspection and supervision which form such an important part in the activities of the special staff. The result is that they are frequently employed on duties which pertain directly to the tactical operations of the command at the moment, and have nothing—or, at least little—to do with their particular specialty.

The foregoing factors lie at the root of the Navy's general practice of composing and organizing the staffs for forces afloat primarily as *operating* staffs wherein *special* staff functions are minimized. Furthermore, although the basic functions of operating command in forces afloat are the same as they are in Army field forces, i.e., Personnel, Intelligence, Operations (including Training) and Logistics, in the naval staff afloat the Operations and Intelligence functions completely overshadow the other two.

The bulk of administrative responsibility and functioning, and of the personnel and logistic activities, is left behind in the hands of the Service Force, or in those of a rear echelon of the commander's staff, under a deputy. Personnel and Logistics Officers (usually one each), and Special Staff Officers and men do serve in the operating staff afloat, but they serve primarily in the Operations or Intelligence Divisions when cruising at sea. In the Navy, although there usually are many different types of ships in the fleet or force in company, it is assumed that the commander is capable of making operational decisions "on his own" and without the need for specialists' advice. (Aircraft are an exception in some cases, due to their comparatively recent advent as weapons and the consequent lack of complete personal familiarity with their capabilities and limitations on the part of some commanders. In these cases, either the staff will include an air specialist who serves normally in the Operations Division, or, if air forms a major component of the fleet or force, the Chief of Staff will be an aviator.)

The reader will also recognize that each ship is a unit, self-contained as to artillery, chemical warfare, antiaircraft, etc., and that, consequently, there are no special troops to complicate staff functioning. Also, with respect to logistics, each vessel furnishes adequate quarters for her own crew and carries her own fuel, ammunition, food, water, etc., for considerable periods of time. Replenishment is not a daily headache, either in regard to men or materials. This is not to say, however, that logistics is not of fully as much concern, both initially and ultimately, in naval operations as it is in land operations; the significant difference between the two lies in the fact that, insofar as staff work is concerned, it is almost exclusively a *rear* problem in the Navy.

These two facts should be kept in mind at all times, viz: the four "G" functions of operating command, while common to both Army and Navy forces, differ between the two in the extent of their respective demands on the operating staffs of those forces, and Intelligence and Operations are practically the "whole show" in the case of the Navy. Also, while there is much similarity between the G-2 and G-3 organization and functioning in the Army and that of their naval counterparts, there are many significant differences. Here, as everywhere in military discussion, categorical statements are dangerous if they are taken too literally. There are always those exceptions which prove the rules, but the rules are nonetheless, essential and valuable basic guides. For example:

*a. The naval staff Intelligence Division vs the Army G-2.*

(1) In contrast to the conditions in Army field campaigns, naval *operating intelligence* does not come in in a continuous flow of a large number of minor items which coalesce gradually into a picture of enemy situation and activities. Naval contacts are far less frequent, but, usually, are far more significant and enlightening than those on land. Land warfare contacts, once established, are normally maintained over protracted periods, but, initially at least, such contacts do not necessarily give much information as to enemy strength and disposition. Naval contacts, on the other hand, are initially in the nature of flashes; they are intermittent but highly revealing.

(2) *Evaluation* as to credibility and significance of individual contacts is a less painstaking and arduous task in naval operations than in those on land. Likewise, the clerical labor involved in keeping up-to-date situation maps of the enemy is normally far greater in the Army than in the Navy.

(3) *Tactical estimates* based upon enemy intelligence must be made more swiftly in warfare at sea than in land operations.

*b. The naval staff Operations Division vs the Army G-3.*

(1) To an Army staff, *terrain* represents one of the major conditioning factors in every phase of the Army's activities. Detailed study of topography, combined with skillful use of salient features, forms the essence of land operations. In naval operations, to the contrary, the open sea offers little in the way of local features to aid either offense or defense. It is true that, in operations near coasts or unnavigable waters, terrain may be a vital factor, and it is also true that the precise geographical location of an action may be highly important in submarine operations; but "terrain" as a factor in naval warfare does not occupy the overwhelmingly significant place that it does on land.

(2) In the field of *tactical movement*, the naval force is not hampered by the problems of inadequate roads, railroads, vehicular shortages, slow and tedious marches on foot, etc., which beset the Army. Subject only to the restrictions of navigability and enemy action, a naval force can move swiftly and directly where it will.

(3) In land warfare, the *development* of large-scale actions is comparatively slow, as a general rule. Artillery preparation usually precedes any major attack, and even with armored spearheads, tactical issues are not, normally, created and then resolved with the almost incredible swiftness which features them at sea, particularly at night. Important sea battles are frequently joined and decisively completed, all in a matter of minutes—or even seconds—in naval warfare.

### Assignment of Officers to Operating Divisions

A typical office roster of the staff of a a naval fleet or task force commander afloat will show the officers listed below. Each such officer will, of course, have assistant officers and clerical help in numbers which will depend upon the size of the force, the complexity of impending operations, and the accommodations available in the flagship.

1. Chief of Staff,
2. Operations Officer (may be designated Assistant Chief of Staff),
3. Flag Lieutenant and Aide (may serve in additional capacity as Personnel Officer),
4. Flag Secretary,
5. Communications Officer,
6. Gunnery Officer,
7. Aviation Officer,
8. Aerological Officer,

9. Intelligence Officer,
10. Logistics Officer,
11. Marine Officer.

For operations at sea, these officers and their assistants are usually assigned to staff divisions as listed below. It will be noted that the Communications Officer, who has primary duties in the Operations Division, has additional duties in the Intelligence Division, and that the Aerological Officer, whose primary duties are in the Intelligence Division, has additional functions in the Operations Division.

*The Intelligence Division:*

Intelligence Officer,
Flag Secretary,
Marine Officer,
Aerological Officer (primary duty),
Communications Officer (additional duty).

*The Operations Division:*

Operations Officer (May be Assistant Chief of Staff),
Communications Officer (primary duty),
Gunnery Officer,
Aviation Officer,
Flag Lieutenant,
Aerological Officer (additional duty).

*The Logistics Division:*

Logistics Officer, assisted from time to time as needed by the various other staff officers in their respective special fields.

*The Personnel Division* is not listed as such because that function is practically dormant during operations at sea. When the need does arise to exercise the Personnel function, the Flag Lieutenant (normally), performs additional duty as such.

At first glance, it will probably appear to the Army reader that there is little clear-cut about many of the above assignments and that much confusing functional overlap is present. Actually, this is not the case; the organization runs smoothly and effectively in spite of the multiple "hats" worn by some of the key officers. The imperative necessity for reducing to the minimum the numbers of personnel on staffs afloat, in order to avoid excessive demands on limited space and facilities aboard ship, is another and potent influence toward such multiple assignments.

It is hoped that the foregoing brief discussion may help to clarify the average Army officer's conception of the organization and manning of naval staffs afloat.

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**The magnificent teamwork of the land, naval, air and supply forces, which combined under single command to break through the crust of enemy resistance at Saint Lo and finally to destroy him in a pursuit to the very heart of Germany, took timing, coordination and balance. And until final victory was achieved, all three of the great coequal arms were continuously employed. The skill and knowledge of the naval arm was not alone employed on the seas but was brought to bear in the successful crossing of the Rhine.**

*General of the Army Dwight D. Eisenhower*

# Can Psychological Warfare Pay Its Passage?

Colonel H. D. Kehm, *Field Artillery*
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*This is the last of three articles on the subject of Psychological Warfare by Colonel Kehm. The first two articles appeared in the January 1947 and February 1947 issues of the Military Review.—THE EDITOR.*

PSYCHOLOGICAL warfare conducted by leaflets, radio broadcasts and loudspeaker address as well as clandestine means was used extensively in World War II. Rather sweeping claims have been made concerning the success achieved. Since this mode of warfare is certain to play an increasingly important role in the future, it seems worthwhile to examine various criteria for measuring the effect of psychological warfare operations and to deduce some general lessons from our experiences in this field. From these we can draw some conclusions as to how we may better prepare to make the most efficient use of this potentially powerful weapon.

### Measuring the Effect of Psychological Warfare

At the outset of a consideration of this subject, it is appropriate to issue an important caution, that is, to stress the fact that the effect of fire and shock action cannot be clearly separated from that produced by the radio, leaflet and loudspeaker. For example, it was the bombs of our aircraft, the fire of our guns and the skill and courage of our troops that placed certain channel port garrisons in a position in which they were receptive to the loudspeaker's message. On the other hand, the facts given to them in leaflets and newspapers, as well as over the radio and loudspeaker certainly predisposed them to an earlier surrender than would have occurred without them. These facts indicate the need for exercising great care in accepting any standard for measuring the effect of psychological operations. The methods most commonly mentioned are:

1. Noting the coincidence between psychological attacks, and a change in the number of surrenders and captures.

2. Determining the number of the enemy who are captured or surrender with leaflets in their possession.

3. Interrogating prisoners to determine what part, if any, psychological warfare operations played in their surrender or capture.

4. Reports from neutral observers, line crossers and agents.

5. Estimating the enemy morale as measured by the effect required to take prisoners, the condition and attitude of the prisoners, and the nature of the enemy's combat action as determined by our own troops.

6. Enemy countermeasures.

### Prisoners Taken

Coincidence between psychological at-

tack and surrender is a poor criterion. The surrender attributable to combat action cannot be properly separated from those due to persuasion. An OWI paper prepared late in the war assembled extensive statistics which showed that the number of leaflets and broadcasts sent to the Japs increased markedly toward the end of the war and that at the same time the ratio of captured to killed Japs also

**Figure 1.**

**A German paratrooper hands over a leaflet fired at his unit by Allied artillery. (Signal Corps photo.)**

increased decidedly. The paper concludes, *post hoc ergo propter hoc.* To the ordinary military man it is quite clear that during and after Leyte and Okinawa it was obvious to even the most fanatical Jap that the war was lost. It is not contended that the leaflets had little or no effect. That is far from true. The point is that the psychological condition of the Japs was brought about by the inexorable facts of the situation. The facts were brought about primarily by bombing, shell fire, daring tactics and brilliant strategy. In such cases the psychological warfare means served simply as instruments to facilitate the consummation of the results of the military operation. They played a minor part in creating it. The leaflet, and all the other media, play their powerful and extremely important role when they bring the facts before the enemy and clearly show him how hopeless his situation is, and give or suggest to him an escape from it. The fact that prisoners were taken after such evidence has been given to the enemy does not mean that they surrendered because they were shown the evidence. They surrendered because the facts were what they were.

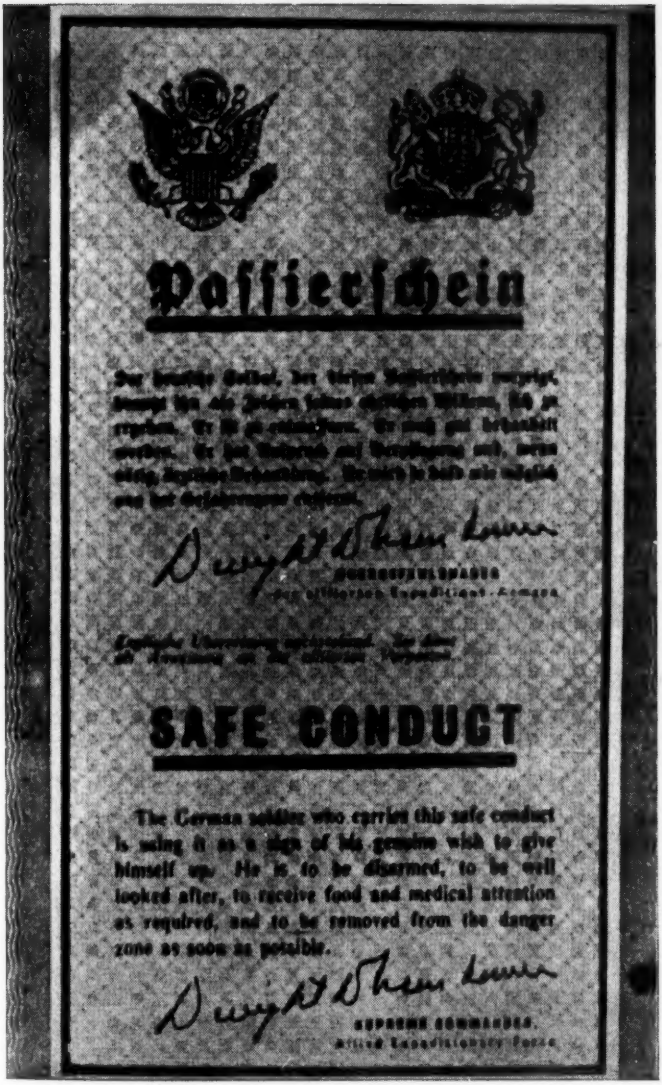
It is also true that a serious reduction of morale may take place and manifest itself in lessened resistence, increase in unauthorized absence and malingering, but with few if any voluntary surrenders. In such cases, psychological warfare would not get credit for the work accomplished if surrenders alone are taken as the criterion of success.

### Prisoners with Leaflets

The percentage of prisoners who are taken with leaflets or other physical evidence of our psychological warfare efforts is likewise a frail reed upon which to lean. See Figure 1. Many soldiers, no doubt, carry enemy leaflets as souvenirs, for other less noble uses, or perhaps as a bit of insurance "just in case." Only a confirmed optimist would believe that his leaflet is the solemn solace to the tired soul of the enemy soldier which he carries as a sacred treasure to guide him to a better and fuller life.

### Interrogation

The interrogation of prisoners can yield many useful evidences of the effect of our operations. All such evidence must be accepted with the usual cautions. Although most prisoners talked freely on this subject, some refused to discuss it, and a few were security minded on all



Passierschein

SAFE CONDUCT

The German soldier who carries this safe conduct is using it as a sign of his genuine wish to give himself up. He is to be disarmed, to be well looked after, to receive food and medical attention as required, and to be removed from the danger zone as soon as possible.

Dwight D. Eisenhower

SUPREME COMMANDER,
Allied Expeditionary Force

**Figure 2.**
**This was the most universally effective leaflet used in the ETO.**

subjects. Allowances must and can be made for these when any conclusions are drawn from interrogations. Among those who talked most freely there was a high percentage who were not typical German soldiers. They were malcontents, introverts, or members of a political or ethnic minority. Obviously, information learned from the guardhouse lawyer, the malcontent and the ingratiating type must be properly discounted. Determining the prevalence of such types and how they may be influenced is, of itself, an important result but it is not a true measure of effectiveness. In short, interrogation is only a partially valuable means of determining the effectiveness of propaganda.

### Observer Reports

Reports from neutral observers, line crossers and agents are important. But they are often too late to be of superior value and must, of course, be subjected to the customary tests given any information from such sources.

### Changes in Enemy Morale

Estimates of the enemy morale and particularly of changes therein are the continuing concern of all good commanders and intelligence officers. Such estimates reflect the effect of psychological warfare to the extent that they are based on reliable facts, particularly the combat effectiveness and conduct of the enemy, the kinds of prisoners taken and the circumstances of their capture. As in the case of interrogation, such estimates are helpful in determining the effectiveness of our operations.

### Enemy Countermeasures

Countermeasures taken by the enemy are the most valuable single gauge of the effectiveness of psychological warfare. No good commander wastes time and effort to defend against an operation which he does not fear or which is simply a nuisance. Ordinarily, he will defend only against an important attack. Therefore, when the enemy answers our psychological attack, he does so because it has had an effect. A most dramatic illustration of countermeasures was the enemy imitation of the safe conduct leaflet which had been developed by SHAEF, and which turned out to be the most effective single piece of military psychological warfare. See Figures 2 and 3. The exceptions are those cases in which he has nothing else to do at the moment or has caught a weakness or an error which he hopes to turn to his own advantage. Barring such cases, a reply to a psychological warfare operation is a good indication of success.

Orders prohibiting listening to broadcasts or reading leaflets are another illustration of countermeasures. The degree of the effectiveness of our operations can be judged by the nature of the punishments prescribed, and by the efforts expended to detect violations and inflict the punishment. Important conclusions can also be drawn from the support which troops and subordinate commanders give to the enforcement of such orders.

Indoctrination against propaganda by orientation and education campaigns is a safe indicator of effectiveness. Careful analysis of monitoring and jamming reports yields information on counter-propaganda and discloses the programs or types of programs the enemy obstructs. Evidence of such measures can be secured from captured documents and by interrogation.

In summary it may be said that neither a favorable time relationship between the employment of psychological warfare and the taking of prisoners, nor the presence of leaflets in the hands of prisoners is a reliable gauge of the effectiveness of psychological warfare operations. Interrogation of prisoners, if properly and carefully done, can yield some reliable in-

SAFE CONDUCT
The American soldier who carries this safe conduct is using it as a sign of his genuine wish to give himself up. He is to be disarmed, to be well looked after, to receive food and medical attention as required, and to be removed from the danger zone as quickly as possible.
Gewährleistet durch den Oberbefehlshaber der deutschen West-Armeen
The following translation is to inform the German outposts:
PASSIERSCHEIN
Der amerikanische Soldat, der diesen Passierschein vorzeigt, benutzt ihn als Zeichen seines ehrlichen Willens, sich zu ergeben. Er ist zu entwaffnen. Er muß gut behandelt werden. Er hat Anspruch auf Verpflegung und, wenn nötig, ärztliche Behandlung. Er wird so schnell wie möglich aus der Gefahrenzone entfernt.

**Figure 3.**
**The Germans paid tribute to the effectiveness of the SHAEF PASSIERSCHEIN leaflet by getting out one of their own.**

formation on this point. A good indicator of success is found in a weakening of the enemy morale as determined by normal intelligence procedures. The best indicator, however, is enemy countermeasures. Such measures include counter-propaganda, jamming, holding forums and discussions concerning our operations and the institution of a prohibition on reading or listening to our propaganda. Some of the less reliable measures can be employed to verify or check on the more valuable ones.

### Did Psychological Warfare Pay Its Way?

Applying these shoes to our own feet it is interesting to note that in one series of thirty Orientation Fact Sheets, six, either directly or by obvious inference, answered German propaganda and thus paid a high tribute to the power of Goebbels' gang. We also paid a tribute to enemy psychological warfare methods when we published orders which forbade captured American troops to give or authorize broadcasts over enemy stations. There is no doubt that the political psychological warfare of the Germans had a long period of success. With minor exceptions, their military psychological warfare efforts were, by our standards, quite crude and relatively unsuccessful. See Figure 4.

Measured by these same standards we can safely say that Allied psychological warfare was decidedly effective in World War II. Hardly a single soldier in the ETO failed to see German orders forbidding listening to a certain broadcast posted on radio sets in occupied areas. Jamming of certain Allied stations was routine. There was ample intelligence to indicate that orders directing officers to explain the falsity and pernicious nature of our psychological warfare were not uncommon.

Similary, there is an astounding amount of evidence showing the promulgation of orders against listening to Allied broadcasts and reading leaflets. The prescribed punishments were severe, in some cases—death. In addition to these criteria, such outstanding leaders as General Eisenhower, General Krueger, and General Mark Clark, to mention just a few, have given significant credit to this means of warfare. Whether the operations achieved a high degree of efficiency, or whether the potential value was fully exploited are quite different matters.

At the end of the war, German morale was certainly destroyed. The Nazi leadership was discredited and the German will to fight was gone. Certain German military units remained efficient fighting elements, but they were few and far between. They were held together by the well known bond that make units good in any army—not by any loyalty to, or faith in, the Nazi ideals. This breakdown was caused by many things. The very propaganda machine that dealt such effective blows against foreign countries had stupefied its own people to such an extent that when they discovered the deception their revulsion was overwhelming. The physical punishment in the military defeat, the bombing attacks and the shock of the occupation were, of course, the chief cause. There can be no exact measurement of the specific contribution made by psychological warfare operations which gave the German soldier and civilian information of the impending defeat, the duplicity and ineffectiveness of the Nazi leadership and the gains to be secured from a capitulation. It is likewise impossible to measure how much political propaganda influenced the soldier directly and indirectly by weakening the morale of his friends and family. Similarly we cannot say precisely how much military psychological warfare depressed morale on the German home front. It is, however, quite clear that all these fac-

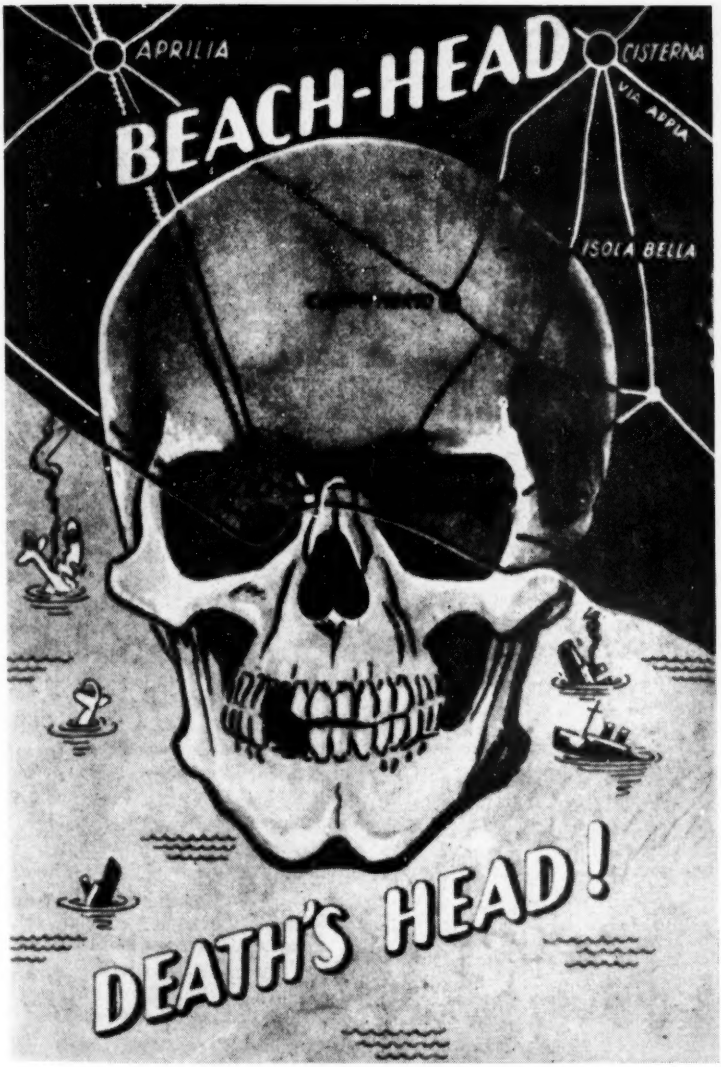



**Figure 4.**
**German leaflets tended to be crude.**

tors contributed. It is equally clear that a military man must realize this interrelation. He must understand the cumulative effect of military psychological warfare and avoid the narrow-minded concept contained in the view "We tried it last week—no Germans surrendered—therefore, it's no good." Carefully planned, well executed psychological warfare integrated into the operational plan, always does some good.

### The Lessons Learned

In presenting some lessons learned from the operations which were conducted in the European Theaters during World War II, no attempt will be made to restrict them to matters covered earlier in this study. In the interest of brevity some of them are not established as clearly as they could be if the time were taken to present all the confirming information.

In too many cases staff officers and commanders did not understand the capabilities, limitations and requirements of psychological warfare. In most of these cases the attitude taken by military men —and this includes professional as well as emergency officers — was strangely contradictory. On the one hand they stoutly maintained that it was all "bunk," and that they wanted fighters and ammunition and cared for no part of loudspeakers and leaflets. On the other hand, they were always ready to complain when our own psychological warfare agencies used a theme which they personally did not fancy and they yelled most violently for "some one to do something" when a particular enemy broadcast or leaflet annoyed them. There was also a tendency to judge successes only by surrenders after a specific psychological warfare operation, rather than to appreciate the cumulative character of the effect, and to understand that reducing the enemy's will to fight by ten per cent may be a greater gain than a few prisoners.

Psychological warfare elements with a military headquarters should be staffed by persons in the military service. All matters of policy for which civilians were used can be handled through political officers attached to the highest headquarters. In order to secure some of the required specialists, limited service and non-routine inductions will need to be employed.

Psychological warfare was most successful when it was integrated in a campaign or an operation from the planning stage.

There was no agency in the War Department adequately prepared to handle promptly and effectively the psychological warfare problems which arose in theaters.

There was very little actual need for the use of political themes. Where they were introduced it was by no means certain that they were particularly helpful. They should be avoided in all echelons below theater.

The themes which proved most effective were: (1) Honest factual news, (2) safe conduct passes, (3) promise of fair treatment as prisoners, (4) futility of continued resistance and sacrifice, (5) inevitable defeat, (6) items of local application (absence of air support, inefficient leadership, shortage of food, etc.).

Leaflets and loudspeakers were by far the most effective means for getting information to the enemy soldier.

Except in special cases, radio was most effective when employed from permanent well known and accepted stations.

Psychological warfare is related to G-2 because G-2 has information on enemy morale and knows what kinds of psychological warfare are most likely to succeed. It is related to G-3 because it constitutes one weapon which must be used like all others, as one element of the

whole integrated operation. It employs means and procedures not common to and other single military activity, and hence requires a separate staff section. Combination with public relations was an error. Whether it is under the staff supervision of G-2 or G-3 is immaterial in echelons up to and including Army Group. At theater and higher levels it should be under a deputy chief of staff because of the potential political involvements, and because civilian agencies with which it must deal usually have direct access to the commanding general or his chief of staff.

Intelligence activities in psychological warfare elements should be limited to selecting appropriate material from normal intelligence, informing G-2 of the intelligence requirements for psychological warfare, and disseminating selected intelligence among psychological warfare agencies within the command.

At theater and higher levels there must be constant liaison between political and military authorities to formulate policy and to insure coordination between military and political psychological warfare.

In units above the corps there should be an element capable of planning and implementing extensive psychological warfare operations involving all or several media.

Greater success might have been achieved by earlier and more frequent liaison with corps and divisions to set up psychological operations to fit local needs. Writing, printing, and shell and bomb loading must be done in centralized places to conserve men and means, but planning operations, especially loudspeaker and artillery leaflets, requires close contact with the lower headquarters.

In the early stages of some operations, there was not full integration of instructions to the troops with what was told to the enemy. Thus it was a long time before the SHAEF safe-conduct leaflet had been fully explained to all units so that all allied troops, seeing Germans with it, treated them as promised. Similarly, there was for a long time no accepted "technique of surrender" which found wide agreement and could be suggested to the enemy on a wide scale.

The psychological warfare units were generally of great help in the control of civilians, liberated and enemy, in the rear areas. They aided, and were aided by counterintelligence and civil affairs agencies.

### What About the Future?

So much, for past wars. Will psychological warfare play a significant role in atomic warfare? We have conducted atomic warfare and we know the answer. It is an emphatic "Yes." The proof of this pudding lies in the fact that the Joint Chiefs of Staff directed the Twentieth Air Force, which they knew would drop the atomic bomb, to bring about "the earliest possible progressive destruction and dislocation of the Japanese Military, industrial, and economic systems, and to undermine the morale of the Japanese people where their capacity for war is decisively defeated."

Whether it was so planned or not, the Potsdam ultimatum and the ominous warning of the blows that were to come, followed by the Hiroshima bomb with a full description of what it did and the promise of more to come which was fulfilled at Nagasaki, were indeed almost perfect psychological warfare. It did not win the war. The war was won by the Navy which swept the Japs off the seas and attacked her coasts at will. It was won by the Air Forces, which choked Japan's protective power, harassed her people and decimated her transportation. It was won by the ground forces which took the bases for the other two services and killed the Japs who might have opposed their operations. These forces had knocked the

main props from the Japanese power to continue the war. The atomic bomb and the psychological warfare employed in its application, gave the Japanese authorities the way out, which they were seeking at the time.

Even before those bombs were dropped, the moral and morale implications of their use was a deep concern. Two months before the attack, a committee of scientists suggested a demonstration drop on an uninhabited area.

Currently, there is a serious and important debate as to whether the moral and political dangers inherent in the use of such bombs are not greater than the military advantages. There can, therefore, be no doubt that the use of this weapon must, in a future war, be accompanied by the most carefully planned and executed psychological warfare — before, during and after the operations. Only in this way can full effect be achieved and the termination of the war expedited.

What about the time we call peace? Will we need psychological warfare then? Again the answer is "Yes." Our president has declared that understanding and education are defenses against the atomic bomb. We can infer from this that he meant that the defense is in keeping any nation from becoming an enemy, and if that fails, keep him from deciding to use this weapon. Understanding and tolerance among nations are fostered by mutual understanding and knowledge of each other's aims, problems and points of view. Information services are created to bring about this understanding. The OIC (Office of International Information and Cultural Affairs) of the State Department has the mission of giving the world a "full and fair picture of American life and of the aims and policies of the United States Government." This is the peacetime counter-part of psychological warfare, just as diplomacy is the peacetime counter-part of military combat. The military man must be interested in it, first, because he must supply essential military information; second, because he must know the degree of success achieved by his country; and finally, because he must be alert to learn any facts about the capabilities and intentions of possible enemies which may be revealed in their operations in this field. Since any future war is most likely to strike our country unannounced, and with devastating violence, our participation in the military aspects of this psychological diplomacy must be continuous and effective.

Another important consideration in this connection is the growing concern of people in all walks of life with public opinion and public relations in general. Business organizations spend millions of dollars annually for this purpose. Associations of management, and labor organizations do the same. Practically every major country in the world is carrying on an intensive campaign of stating its case to foreign countries. England and Russia, our friendly rivals in the Big Three, are particularly active. With the experience of the recent war and pre-war years behind them, a sizeable and powerful element of our people will insist on an extensive propaganda campaign, should the peace again be obviously threatened. We may therefore anticipate that in the event of war there will be strong pressure to take the conduct of military psychological warfare away from the military authorities. In this connection it is interesting to note that the list of members of the advisory board of OIC, as reported in the press, included not a single army or navy officer.

### The Military Job in Peacetime

A consideration of the factors just discussed reveals that the Army has several essential tasks and responsibilities in this field in times of peace. These responsibilities are:

1. Be familiar with the policies, capabilities and limitations of our national information services.

2. Be familiar with the operations of the information agencies of foreign countries so as to discover any indications of military policy.

3. Keep informed of the latest developments in the techniques of public information to develop new and improved procedures for use in military psychological warfare.

4. Keep under constant review personnel requirements and tables of organization for psychological warfare in the light of new techniques and the changing nature of military operations.

5. Train all officers in the capabilities, limitations and methods of psychological warfare. Train a limited number of specialists in organization and techniques.

**Training**

A second requirement is training. Experience has shown that the many troubles that arose in the recent war in connection with this and all other "new" aspects of operations were due to the fact that too few people were informed on the subject. Training should, therefore, have the dual purpose of giving all officers a general knowledge of psychological warfare and making specialists of a few. One of the best ways in which these objectives can be attained is to provide coverage of this subject in our training literature and in our schools.

In respect to training literature, the subject should be included in both FM 100-5, Field Service Regulations—Operations, and FM 100-15—Manual for Commanders of Large Units. It should be written into these manuals, not as a special subject but as an integral component of various types of air and surface operations, the capabilities and limitations should be explained and the planning procedures should be described.

In addition, there should be a small special manual with the following subsections:

Principles, capabilities and limitations of military psychological warfare.

Technique of military psychological warfare.

Planning for military psychological warfare.

Organization.

Operational precedures.

Another equally important way of spreading knowledge of this important subject is by including it in the courses in the schools of the army educational system.

Procedures applicable in various units (division, corps, army) should be taught in the appropriate college. Coordination between Services and with the other governmental departments should be taught in the higher colleges. Branch schools should teach techniques such as leaflet bombing, leaflet shell firing, and operation of loud-speakers which are appropriate to the particular branch.

Publication of the suggested manuals and adoption of the instruction programs proposed, will not solve all the military problems incident to this important function. It will, however, remedy the deficiency noted by one of our three star combat commanders, who said—

"Psychological Warfare Operations and Methods are not sufficiently well known to officers of the Army, generally. I would like to see handbooks and manuals prepared and a course of study in Psychological Warfare introduced into the Command and Staff College. . . ."

Such a program would also secure the advantages and avoid the disadvantages to which another successful army commander referred, when he said—

"Psychological Warfare had an important place in the European Campaign. It can accomplish much good. It can also be extremely harmful."

# Civilian Employees *in a Theater of Operations*

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AN increase of eighteen divisions in the strength of our forces in a Theater of Operations would be news. It would be even more newsworthy if these eighteen divisions did not increase the size of the United States Army, and were not taken away from someone else.

It actually happened! In Europe at one time, before VE-day, Uncle Sam's Army was hiring 260,000 civilians, everyone of whom, directly or indirectly, took the place of an officer or enlisted person, and permitted uniformed personnel to be used directly against the enemy.

It must be remembered that military manpower must be preserved for combat. We must minimize diversion of troops to jobs which civilians can do. Most communications zone jobs, and many jobs in the combat zone, can be performed by civilians, and unskilled civilian labor is more efficient than troop labor.

For example, in World War II, there were many ways in which our overseas forces used civilians: Clerical and administrative work; general construction; bridge, road and railroad construction and maintenance; supply handling at beaches, depots and dumps; chauffeurs and drivers; forestry and logging; motor maintenance; stevedore and dock work; hospital services; supervision and control of prisoners of war and displaced persons.

Of course, the countries where we hired these civilians had manpower problems of their own. In general, there were requirements for civilian manpower in addition to replacing or supplementing our military forces. Men were needed for essential civilian pursuits to provide food, shelter, utilities, water, sanitation, medical service, transportation, public safety and government; and for private industry, commerce, and agriculture, which contributed directly to the support of our forces.

Civil Affairs Military Government personnel are concerned with the adjustment of these competitive demands for manpower, and are generally involved in the procurement of civilian employees for the Army in the theater.

Let us recall the picture of typical conditions in a theater. Industry is paralyzed, private enterprise is disorganized, health conditions are bad, transportation and utilities are crippled or non-existent, agricultural production is at a starvation level, people are miserable, homeless and apathetic—sick of soldiers and armies, and government agencies have disintegrated. That is the unpleasant setting for our civilian employee procurement, administration, and utilization problems.

The sources of civilian personnel within a theater of operations include the civilian nationals of the allied, neutral, co-belligerent, and enemy countries in which we are operating, as well as displaced persons and refugees from other areas.

In England we were in competition for

civilian employees with British industry, the British Army, and the auxiliary services. In Germany, the chief source of labor initially was displaced persons. This source, however, was eliminated with the progress of repatriation.

Before discussing a typical organization and procedure for securing and using civilians, two definitions are in order:

*a. Static Labor.*—Static labor includes civilians employed within or near the area of residence, returning to their homes after the day's work. The Army has only limited responsibility for providing food, clothing and shelter for static labor. Static labor falls into two categories:

(1) Regular Labor—continuing employment under written contract and, (2) Emergency labor—day to day employment, may be under oral contract only, for specific short-time jobs.

*b. Mobile labor.*—Includes civilians employed under written contract for long-term employment, and organized into labor units, with cadres of uniformed military supervisors. Mobile labor moves from place to place as required, just as any military unit. The Army feeds, clothes, shelters and administers mobile units, and such units are subject to military law.

There is very little official doctrine concerning the civilian employee program in a theater of operations, but the European Theater provides a type solution. By May 1944 the organization in that theater had developed as described in the following.

Civilian personnel was a command function in all echelons of the communications zone, and in army groups, or field armies. The staff agencies and services indicated below for ETOUSA were generally duplicated in communications zone sections.

The following agencies, staff sections, and services were directly concerned with civilian personnel problems. Obviously other agencies and staff sections were indirectly concerned in their own special fields: (a) The general purchasing agent, (b) G-5 (Civil Affairs), (c) G-1, (d) G-4, (e) Engineer, (f) Military Labor Service (December 1944) and, (g) Labor Administrative Officers of using services, for areas and projects.

The functions of the general purchasing agent included the negotiations of agreement with allied or neutral governments concerned for employment of their civilians by the Army; to include policies and procedures relating to wages, working conditions, and method of payment. He also established liaison with labor representatives of armed forces of our allies to insure uniformity in practices relating to civilian employees; and he had technical supervision of purchasing agents in lower echelons, and liaison with the service charged with actual procurement—the Engineers.

G-5 (Civil Affairs) responsibilities encompassed the entire labor problem in liberated or occupied territories, including the requirements of local government, industry, commerce and agriculture, with which the army had to compete for labor. G-5 was responsible for staff supervision of civil affairs. Military government detachments which established employment offices and secured the registration of workers in liberated or occupied countries.

G-1 developed broad general plans and policies for allocation, use, and administration of civilians employed by the United States Army; and approved bulk estimates of requirements, consulting G-4 for allocation priorities.

G-4 established priorities for allocation of available labor to the using services.

The engineer was charged with the operation of the Civilian Labor Procurement Service, which was responsible for the supervision of field agencies of procurement and distribution, the approval of requisitions, within approved allocations, and the amplification and administration of general policies relative to wages and working conditions. This service also operated regional labor offices, and provided technical

supervision over procurement at local employment offices, established by Civil Affairs Military Government detachments in conjunction with local civilian labor authorities.

The using services also had definite responsibilities. These included maximum utilization of available civilian manpower consistent with security; estimation of requirements and submission of requisitions; administration, supply, and where necessary, feeding, clothing, and sheltering of civilian employees, and designation of officers as Labor Administrative Officers, for areas or projects.

In general, in the preliminary steps in procurement in the ETO the general purchasing agent negotiated the basic agreements with the allied governments concerned for the employment of their nationals, and got together with high labor officers of the allied armies. G-1 amplified these agreements and put out general directives concerning procurement, allocation, administration, and use. Chiefs of the using services submitted estimates of their civilian personnel requirements to G-1 who, coordinated with G-4, established allocations or credits. The allocations thus established were overall procurement objectives for the Engineers Civilian Labor Procurement Service. Requisitions went to the Labor Procurement Service which passed them for filling to the civil affairs officers in local labor offices.

Civil affairs detachments entering an area would contact local authorities, have local labor offices reopened, and invite or require the registration of workers. The using services submitted requisitions to regional labor offices of the Civilian Labor Procurement Service, which passed them to local employment offices for filling. Civil affairs personnel at local employment offices would have work applicants screened by the provost marshal for security purposes when necessary, and would then initiate the employee's individual records and contracts. The using services picked up its workers, completed the contracts, issued identification badges, tools, and necessary clothing and ration cards, and assigned workers to their jobs.

The Military Labor Service of ETOUSA, a special staff section, and in a sense a technical service, was charged with the organization, allocation, and supervision of administration of civilian mobile labor companies, and the military cadres of these companies. Interior administration of these companies by military overhead personnel was similar to that in any military unit. Civilian mobile labor companies were attached to service units, as required, for continuing jobs or special projects. The service to which they were attached was responsible for their administration, just as a regiment is responsible for the administration of its companies.

There were many difficulties, however, connected with procurement. In England, manpower was pretty well picked over—woman power, also. In Normandy, many able-bodied men had been shipped to Germany. Private employers wooed U.S. employees with black market wages. Poorly nourished civilians had neither the heart nor muscle for hard work, and many did not have sufficient clothing in which to go to work. Workers were so sick of enforced labor they were suspicious of, and avoided, our labor offices. Skilled laborers did not want semiskilled nor unskilled jobs.

In Germany, workers wanted to fix up their battle-damaged homes first. They spent their days looking for food and clothing. Wages meant little when there was so little to be bought. Moreover, they were in fear of their homes being looted while they were at work.

Certain principles applicable to the procurement and use of civilian employees derive from international law, the laws of the United States, and past experience. In allied or neutral countries, labor is voluntary as far as the United States forces are

concerned, although local national governments may have compulsory labor laws, and the Army works through existing national or local government officials. United States Forces coordinate their civilian employment policies with those of Allied Forces, and conform in general to local labor laws, practices and wage scales.

As soon as possible, and to the extent practicable, indigenous government agencies should be the "official" employers, and should pay labor hired for our forces. The United States reimburses the government concerned. This procedure preserves local government controls, facilitates administration of labor laws, collection of taxes, family allowances, and contributions for social security.

Good relations with inhabitants and avoidance of labor disturbances are desirable, and conflicts are referred to local government agencies for settlement. Labor should not be procured through labor brokers or "straw" bosses, but through the established agencies as mentioned above. In enemy countries labor may be *requisitioned* for the needs of the army, provided we do not require enemy nationals to contribute directly to operations against their own forces, or it can be *voluntarily* employed in any type work conforming to international law. Border-line cases are decided by higher commanders. Enemy civilian labor, whether compulsory or voluntary, is paid according to prevailing wage scales, or on a cost-of-living basis.

In the interest of efficiency of workers and of creating a favorable attitude, we conform insofar as practicable, to local labor practices. We should require local authorities to assist to the maximum extent possible, in procurement and payment of workers. The United States does not reimburse enemy governments.

In all areas it is a sound principle to avoid disturbing agricultural labor effectively engaged in food production. Hunger and famine follow armies, and food is a strong ally for our forces.

Implementing these principles were certain general policies and practices established in Europe, many of which were applicable to other theaters as well. The eight-hour day and forty-eight-hour week were standard for civilian employees in the ETO, with overtime rates for weekends and rest days. Employment contracts with civilian employees were generally for three to six months, and were terminable by notice of either party. Provision was made for seven days leave with pay every six months.

The United States provided workmen's compensation benefits to its civilian employees for injuries, illnesses, or death, incident to employment. Claims were settled locally up to $250.00, and by a representative of the U.S. Workmen's Compensation Commission in the various echelons of the Claims Service in the ETO for larger amounts. Payments were based upon the laws of the country where employed.

Displaced persons and mobile labor units were generally provided shelter by the using service. Other static labor was exceptionally provided shelter when necessary. The employee was charged for any shelter furnished by the Army.

Mobile labor was rationed with the using service unit or installation, and included in their ration returns. It was generally necessary to provide static labor a noon meal of 1,500 calories to sustain their productivity, in view of the low dietary standards encountered. Depending upon local conditions, this noon meal was provided either from army stocks or civil affairs food supplies. All employees were charged for any subsistence furnished them by the army.

Mobile units were completely clothed and equipped by the using service, by requisition on supply services, and issues of clothing were occasionally necessary for static labor. All clothing and equipment

remained the property of the United States.

Medical service was provided for enemy nationals to include first aid only. Others were provided first aid, medical care, and hospitalization in civilian hospitals, their own military hospitals or, if necessary, in United States Army hospitals. No charge for this medical service was made.

All civilian employees, enemy or otherwise, must be paid, of course. Initially in any given locality, the using service might have the job of keeping pay records, preparing pay rolls, and actually paying the workers. As soon as possible, however, the job of preparing pay rolls and paying was turned over to local government labor agencies. The using service had to maintain pay data records and turn this over to the local agency making payment.

Civilian labor employment procedures in other theaters varied somewhat from ETO practice.

In 1943 in North Africa, the General Purchasing Agent received requisitions for labor initially.

In Sicily, the labor division of the chief civil affairs office took over Fascist trade union offices for employment offices, and invited registration of workers. Using services were notified, and secured employees from these offices.

In the Philippines, labor for combat units was secured by Philippine Civil Administration Units. These units were made up of civil affairs personnel and included a unit commander, a labor officer, legal officer, supply officer, welfare officer, finance officer, public safety officer, medical officer, transportation officer, engineer officer, and enlisted assistants. Labor requisitions of combat elements were placed with these units while other services requisitioned on labor offices established by base section personnel. The Finance officer of the civil administration units prepared pay rolls, and drew currency from the theater fiscal officer to pay the workers. The theater fiscal officer was custodian of Philippine Commonwealth funds, and used these funds for payment of labor employed by the United States Forces.

In Okinawa, all able-bodied male inhabitants were held available for working parties. Priorities were determined by divisions, corps, Tenth Army, and Island Command progressively. Requests for labor were submitted to military government officers of the field force units or the Island Command, and payment of labor was made by military government headquarters. Food was supplied by the using units or services.

Provision for the use of civilian employees in a theater should be included in every operational plan. Labor plans must be based upon a study of labor availability and conditions in the area concerned. G-1, G-5, the general purchasing agent, and the service to be charged with labor procurement must be represented in the planning. These plans must include: (a) Organization and responsibilities; (b) relations with allied and neutral governments; (c) conditions of employment; (d) inclusion in troop list of labor supervisory units, and personnel; (e) supply, to include food, clothing, equipment, field shelter, and tools; (f) fiscal arrangements; (g) administration of labor.

As has been mentioned, War Department doctrine on this important method of stretching the troop basis is rather sketchy. No doubt the experience of this war will someday be incorporated in a full official treatment of the subject.

The foregoing is intended to merely indicate the general nature of a very important aspect of military operations, and to provoke interest, thought, and other contributions which will assist in the formulation of sound doctrine.

# *Task Force*

# Ammunition Planning

Lieutenant Colonel Wayne H. Snowden, *Ordnance Department*

CONSIDER the planning of a military operation which is to be mounted, launched and sustained from a point separated by time-distance from the operational zone. Next, narrow the scrutiny of the problem to the question of matériel—the question of how the individuals who are to conduct the operation, plus their equipment, will be transported to the zone and how they are to be continuously sustained once there. This states a generalized problem in supply. In such a G-4 problem may be found certain underlying principles which would apply to any specific form which the general problem might take—a shore-to-shore operation by ship, a continent-to-continent operation by air, and, perhaps operations by rocket at terrific speed in the not too distant future.

It is against such a background of generalities that value may be found in the following discussion of ammunition supply planning for the 3d Infantry Division, reinforced, in the invasion of Sicily at Licata, in July 1943. The discussion concerns itself with principles which, while implicit in supply doctrine, tend to become obscured and sometimes neglected at the level, and within the service branch, where they must be implemented in an operation of this sort.

The landing at Licata serves well to exemplify a general situation. The shore-to-shore time-distance was impressive—more than twenty-four hours by ship. The force was special, consisting of the 3d Infantry Division swelled to more than double size by a strange array of attachments, including a *Tabor* of *Ghoums*.[1] The 3d Division Headquarters was held responsible for, and granted a very free hand in, the detailed planning for all aspects of the first several days of the operation, both on the near and far shores.

Ammunition, likewise, serves well to demonstrate principles which characterized the supply problem as a whole. Ammunition for Licata constituted about three-fourths of the supply-lift tonnage and thus became the determining item in over-all supply mass. Furthermore, at Licata as in any operation, the ammunition requirement had to be based on estimates. Expenditure of ammunition cannot be forecast with the precision with which one can forecast the consumption of rations. Estimating ammunition, therefore, exemplifies the basic task-force supply problem of striking that fine balance between risk of short supply on the one hand, and waste of transportation facilities on the other.

Ammunition planning began with an attempt, by 3d Division Ordnance, to make the best possible estimate of what ammunition would be expended during the days in which the task force was to be responsible for its own supply.

[1] *Tabor*—A Corps of Moroccan Cavalry.
*Ghoum*—Mounted tribesman. Probably corrupted here to mean a relatively large unit of troops native to French Africa.

This may sound like a very obvious beginning. The Quartermaster was of course multiplying the number of men by the number of days to obtain the consumption of rations. But strangely, in the case of more complex supply, ammunition in particular, the question of how much actually will be needed at the place of consumption is seldom considered by itself. Yet this is the one real objective.

A common approach to complex supply at task force level is a frank admission that expenditures cannot be acccurately predicted, followed by an endeavor to compensate for this misfortune by laying down such a mass of reserve that practically any demand can be met. Such an approach displays critical shortcomings when applied to the opening of an operation.

It may be categorically stated that at the opening of an operation of the type discussed here the critical problem in logistics is to build up power with maximum speed. There is no room for a reserve, because there is immediate need for everything which can be got into the combat zone. Reserve ammunition could be got into the zone only at the sacrifice of transporting capacity which could otherwise be used to accelerate the power build-up.

With such considerations in mind, 3d Division Ordnance began its study of probable expenditures. Attention was turned first to the initial seven days of the operation. This was the critical build-up period, and, furthermore, ammunition for this entire period was to be carried on the assault ships.

Seven days may have been peculiar to this operation, but some period, whether two hours or two months, is characteristic of every operation—some period in which supply-carrying (and handling) capacity must be fixed in advance and at sacrifice of force-carrying, or build-up capacity.

An expenditure study is usually reduced to its simplest terms by the use of official data as to fire rates (Staff Officers' Field Manual 101-10). Official fire rates are designed to incorporate a wider sampling of experience and a more thorough accounting for contingencies than data which usually would be available on task-force level.

The factor which upset this picture in the spring of 1943, and which compelled revaluation of the entire expenditure question, was the Tunisian fighting. Out of this experience, the ammunition section of the II Corps Headquarters had carefully compiled a "II Corps Day of Supply." This was an expression in rounds per weapon which, when applied to a committed organization of division size, gave a fairly close approximation of an active day's expenditure. It was admittedly a guess in regard to some types of weapons, but it overwhelmingly justified itself in at least two respects. It indicated for the first time the enormous expenditures which could be expected from 105-mm howitzer battalions in support of infantry, and it revealed the intense use of light 81-mm shells.

It was obvious that in these, and perhaps other instances, the Tunisian fighting had revealed new facts about the employment of arms. Such facts, having been determined in combat, could be expected to be more significant than *a priori* figures of the War Department, no matter with what care the latter had been evolved.

On the other hand, the Tunision fighting was in many ways special. It had entailed great distances, wide open country, considerable armor, and other factors which could not be regarded as typical of the operation to come.

It thus became apparent that there was no easy, ready-made answer to the question of how much ammunition the 3d Division Task Force would probably need in that critical seven days. The answer would have to be determined from close study of

every piece of evidence that could be brought to light.

To facilitate the study, a weapons list was prepared from the order of battle, as it stood at the moment. Major weapons (including mortars and automatic weapons in combat organizations) were compiled with precision, and numbers of all other weapons, where not precisely known, were estimated. Opposite these were set down the rounds per day for each weapon, as indicated by the two basic sources of information—Tunisian experience and official fire rates. This arrangement served to present the two basic guides to expenditures in such a way that they could be conveniently compared as each weapon was studied with reference to its contemplated employment in the forthcoming operation.

As an illustration of the general approach, it was known that the operation would open with an infantry assault on a hostile beach, artillery following. Beyond the beach lay mountainous terrain, and the 3d Division was specially trained for exploiting such terrain by rapid movement on foot. All this indicated increased expenditures by light weapons, more use of grenades, etc. It argued for ignoring Tunisian data, which showed low expenditures for these weapons, and even for questioning the adequacy of amounts indicated by official data, which presumably would apply to an "average" situation.

Naturally, particular attention was paid to instances where the Tunisian rates were one hundred per cent or more in excess of official rates. Ammunition officers of II Corps had been contacted and had been able to furnish valuable information on the extent to which their figures could be generally applied. Some were true rates, some were padded with a safety factor, and some were influenced by the degree of availability of those particular ammunition types in Tunisia.

A balanced study, incorporating the foregoing and all other considerations which could be imagined, led to the addition of another column of figures to the weapons list. The column showed the division's own estimate of expenditures per weapon per day.

In this tentative form, the estimate was presented to, and discussed with, the headquarters of artillery, AAA, armor, infantry regiments and other major combat organizations concerned. With their suggestions incorporated, the summary was presented to the Task Force G-3, in order to make certain that no operational requirements had been overlooked, such as might have resulted from plans with which subordinate units were not fully acquainted.

It is well to re-emphasize that up to this point only one objective was sought: the best possible estimate of how much ammunition the force would expend. In practice, it is too easy to swerve from this objective. Weights differ so enormously that there's a great temptation to increase light-weight items because the over-all effect of such increase is negligible. Or it's tempting to add items just "to play safe." At the proper time, these are very worthwhile considerations. But if they are allowed to enter the picture when expenditures alone are under consideration, the result is a hodge-podge which is not actually an estimate of anything at all.

With the G-3 criticism incorporated, the expenditure estimate was considered complete. As this estimate differed greatly from the ammunition contemplated for the assault lifts in the outline plan for the entire Sicilian operation—particularly as to approximately doubling the quantity for 105-mm howitzers — informal inquiries were at once made through ordnance ammunition channels as to availability of these amounts. With fairly definite assurance that these ammunition quantities could be made physically available—if

their use for such purpose was approved—work was started immediately on the proposal for ammunition to be carried.

The most basic decision affecting this proposal was that supply would be aimed at replacing expenditures.

Here again is a principle which at first looks obvious. The significant point is, however, that in the build-up phase of an operation, ammunition carried in as organizational load by fighting units is a large fraction of the total quantity which may feasibly be put into the zone. It is sometimes argued, therefore, that initial supply should aim simply at augmenting basic load to the extent that the two—basic load plus supply—when lumped together should exceed expenditures.

The fallacy in this line of reasoning is that basic load achieves one objective which back-up supply, no matter how abundant, cannot influence at all. That objective is minimum time-distance to one specific point of consumption. The objective is achieved by sacrificing availability of a given item at most points of consumption other than the one for which it is intended. The result is that the general availability of basic load is practically zero.

An extreme example may be found in the basic load for M1 rifles. The ammunition carried in the belts of riflemen alone is sufficient to last several days. But if "A" Company exhausts its ammunition in a fire-fight, there is no practical way of leveling off the remaining ammunition in the regiment. Company "A's" expenditure is soon reflected, therefore, in a requirement through supply channels for a quantity of ammunition equal to that which was fired, even though the total already in the regiment is numerically sufficient for several days.

Maintaining basic loads is like maintaining pressure in a pipe-line of gas. If the pressure in the pipe-line falls, it doesn't make much difference how much gas is in the storage tank; the burners at the far end won't burn full blast until sufficient gas has been put back in the pipe to restore the pressure. It is not enough that the tank plus the pipe hold whatever gas is to be burned; the tank must instantly put into the pipe whatever gas goes out at the burner.

The analogy forms an almost perfect illustration of the necessity for keeping basic load intact and planning supply—from the very outset—to match expenditures.

The decision that ammunition supply would be aimed at replacing expenditures reduced the problem of what would be carried to a determination of the relative importance of different ammunition types. Were some items so important that a factor of safety should be added to make delivery more certain? Were some so unimportant as to fail to justify their weight? To what extent could one type be substituted for another? To what extent could one weapon substitute for another?

These questions are vital where carrying capacity is at a premium, because a safety factor cannot be added to one ammunition item without, in effect, reducing the quantity of every other item.

As an example of the way in which these questions were thought through, the quantity of 81-mm light HE shells was increased for the following reasons: (1) the estimated expenditure lay between the widely divergent rates indicated by Tunisian data (high) and official data (low); the probable error in the estimation was therefore greater for this item than for others; (2) difficulties of manhandling mortar ammunition in the early phases of the operation, coupled with movement, shortages and vehicles and need of piling ammunition at successive individual mortar positions, suggested some loss of availability through many small quantities becoming scattered about the beach area; (3) 81-mm mortars would have a unique role, especially prior to artillery support, and

therefore the guarantee of supply should be made better than for some other items; (4) far more rounds per ton could be provided in 81-mm light than in 81-mm heavy, and in certain situations the light could substitute for heavy.

By application of similar lines of reasoning to each individual item, the final proposal of ammunition to be lifted was made up. In form it showed: weapons, numbers of weapons, rounds per day per weapon (official, Tunisian and force-proposed rates), total proposed rounds of each ammunition type for the seven days, total tons by weapons for the seven days, and the ground total of tons to be lifted.

In this form, the proposal was submitted to the force G-4, and by him, with Ordnance sitting in as technical assistant, personally to the commanding general of the task force.

Both the procedure and the form of presentation are important. They constituted a complete piece of staff work. They permitted the task force commander to see at a glance just what ammunition was contemplated, how this compared with established guides to expenditures, and what the total requirement would amount to in terms of shipping space. In literally a few minutes he was thus able to approve or alter the estimate for each separate ammunition type and to specify the lift tonnage which would be provided for ammunition supply.

The considerations which led to the particular tonnage which was fixed are outside the scope of this discussion. The figure was a little under 3,500 long tons, and to bring the ammunition lift within this tonnage the task force commander directed that six days supply be carried instead of seven.

Recomputing to meet this requirement emphasized the value of knowing precisely what the proposed figures represented. It was not necessary to review the entire estimate to make certain nothing would turn out critically short. It was necessary only to multiply the estimated daily expenditures by six instead of seven, then re-evaluate the safety factors. This flexibility permitted immediate requisitioning of the desired ammunition and thus the initial planning phase was completed.

Resistance to the Licata landing was initially so light that ammunition supply was never subject to serious strain during the period that the force provided its own supply. Justification for the methods used in setting up the quantities, however, became evident as the operation proceeded. While total expenditures fell below the estimate, relative expenditures by types more closely matched the force estimate than they did either of the basic guides from which the estimate was prepared. Furthermore, virtually every ammunition type was drawn from supply points within the first few days—demonstrating the wisdom of aiming supply at replacement of expenditures.

The Licata operation formed a striking demonstration of the way in which the most detailed planning will bear fruit. The planning made it clear that inexhaustible opportunities to perfect a general plan exist at every staff level, and within every branch, and that such opportunities may be profitably exploited by isolating the objective and moving toward it in a straight line.

# The Medico-Command Responsibility *for* Conservation of Manpower

Colonel L. Holmes Ginn, Jr., *Medical Corps*
Instructor, Command and Staff College

FOR years the training of the Medical Department has been directed toward the accomplishment of its primary aim as depicted in the motto—"To conserve the Fighting Strength." World War II has re-emphasized the fact that the Medical Department can accomplish this task only when the commander realizes the necessity for this technical advice and is willing to back his medical advisor when he submits sound recommendations which will assist in the accomplishment of his (the commander's) mission. On the other hand, the responsibility of the medical officer includes an evaluation of the pertinent factors so that he will not urge the adoption of a medical plan which is inimical to the over-all plan of the commander. The medical officer should be prepared at all times to present the medical problems which confront the command with an accurate estimate of their seriousness. It is then the responsibility of the commander to utilize these factors in the formulation of his final estimate.

The recent war has done much to close the gap between command and medical service, particularly in the combat zone. This was the result of experience on the part of both, and indicates a continuing need for emphasis on this relationship in our peace-time training. It was, however, discouraging to hear an experienced officer in Europe, when discussing the size of a proposed reorganized division, suggest reducing the services as a first step. He had clearly forgotten in a few months that he often had insufficient service elements to meet his needs.

The demands upon the manpower of our nation were such during World War II that our original goal in combat divisions could not be met. Our most fruitful source of additional manpower is the conservation of that already at hand, for obviously a sick soldier is worse than none. We may retain the effective strength of a command by the prevention of disease, by hastening the return to duty of those who are ready, and by the adoption of a plan of combat rotation which recognizes the law of diminishing returns as applied to human endurance under combat conditions.

The avoidance of preventable disease in our troops is the most practical method of maintaining an effective fighting strength, but it is not the most simple, for it entails close cooperation between command and medical service in all echelons—the final implementation must be by the company officers. Far too many of our junior officers have not been indoctrinated in their responsibility to the individual soldier, and this includes his environment in its entirety. The commander may well use the sick rate from preventable disease as part of the index of the efficiency of his subordinates. Such a policy announced well in advance will almost always serve to increase the vigilance of the responsible officers if

they are given good instruction in the practical methods of approach, and material support from above in the execution of their plan.

Two examples which occurred in the same theater may serve to illustrate these points.

In 1943, when the invasion of Sicily was imminent, it was realized that malaria and the common diarrheas would be significant factors in the maintenance of health of the troops involved. Atabrine which had not been too well received in the United States during its trial in 1941, was introduced to the troops in the theater several months prior to the invasion. There are certain individuals who must become accustomed to the drug when it is started, and there was the usual number of early reactions to its employment. The stories of these reactions were magnified and broadcast so that the reputation of our most vital protective measure was seriously impaired and the vigor with which the antimalaria campaign was waged left much to be desired.

By the end of the Tunisian Campaign in May 1943, the position of the medical field units in the theater had so improved that sufficient were available to support the operation adequately, and these were available to the invading force. Tactical demands for combat troops in the initial phases of the operation excluded badly needed medical units from the shipping list, and initially insufficient medical units were landed to support the operation properly. In the follow-up convoys, medical units were frequently separated from their equipment, so that active operation was impossible for a considerable period of time.

Air evacuation of casualties from Sicily was planned for D+14, but by D+5 the situation appeared critical and C-47s went into Sicily under fighter escort on 16 July to establish air evacuation of the accumulating casualties. This service was maintained until the end of the operation and transported over 3,000 casualties in the succeeding forty days.

The combination of distrust of the drug Atabrine, rapid movement of the troops during the operation, and the absence of a vigorous antimalaria program on the part of the field commanders resulted in an admission rate of 385 per 1,000 per annum from malaria alone in the entire Seventh Army during the month of August 1943.

During the Sicilian operation, the principal combat unit of the Seventh Army was the II Corps and this organization moved into Italy in September 1943, so its experiences the following year may be viewed as a possible comparison.

In the late winter of 1943-44 after the grueling combat in front of Cassino, II Corps was pulled out of the line for needed rest and refitting. Even a cursory survey of the area to be covered in the coming spring operation revealed the seriousness of the malaria problem. The Garigliano River and the flooded coastal marshes were to the immediate front, while farther north the Pontine Marshes which had been notorious as a source of malaria for centuries, were known to have been flooded, thus abolishing all benefits the area had received from Mussolini's drainage projects.

The antimalaria program which was strongly backed by command included the following:

1. An antimalaria school was organized. Qualified personnel from Corps troops were used to assist, but the bulk of the instruction was conducted by personnel of a malaria survey unit obtained for this purpose. The courses included:

*a.* A short intensive refresher course for all medical officers.

*b.* A course for Medical Department technicians.

*c.* A line officers' course attended by at least one officer from each battalion.

*d.* A line noncommissioned officers' course attended by at least one noncom-

missioned officer from each company or similar unit.

2. Command responsibility for the malaria rate was fixed and the program inaugurated included suppressive therapy (Atabrine), protective equipment and elimination of mosquito breeding in the occupied area.

3. Assurance that Corps would make every effort to eradicate mosquito breeding in the areas adjacent to troop concentrations and those too difficult for the troops to manage.

The Corps moved back into the line on the west coastal plain of Italy before mosquito breeding had become more than a threat. The educational program had immediate results. Commanders of subordinate units stressed the elimination of small mosquito breeding areas and use of the individual protective measures. In some units it cost a soldier a summary court to be found without his insect repellant on his person.

To implement the Corps responsibility, a committee composed of the Engineer, Civil Affairs Officer and Surgeon was appointed. The Surgeon selected the areas upon which work should be undertaken, such as villages, streams, and lakes; the Civil Affairs Officer called upon the local population to do the work, which included clearing out stream beds, oiling small bodies of water, and cleaning up the villages. The Engineer produced equipment and labor which was beyond the resources of the local population.

The flooded area south of the Garigliano River was dusted with DDT by airplane, but took much arranging because there was a certain hazard in permitting a plane to emit a spray so close to the hostile front line. The fear was that the enemy might mistake the intent and believe that the plane was spraying gas. Persuasiveness won, however, and chemical warfare was not launched by the antimosquito program.

That the program was effective was evident from the start. The number of mosquitoes produced in the area was relatively few, and the malaria rate remained relatively low during the operation which moved the II Corps through Rome and north along the coast.

It will be recognized that the two instances cited above were different. The loss of manpower in Sicily has been attributed to several factors, while in Italy only one phase of manpower conservation has been discussed. By the spring of 1944, there were adequate medical units in Italy to support the operation properly.

The conservation of manpower is a grave responsibility of all echelons of command, and it can be accomplished only when there is close liaison between commanders and medical officers to eradicate preventable disease from the troops.

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**World War II has further awakened America to the fact that the "bottom of the manpower barrel" can be reached. Should World War III ever be thrust upon us with no coordinated plan as to the manner in which the nation's manpower will be distributed to the several services, nothing but disaster can result. The technical requirements of the Air, Navy, and Ground Forces, including the present day infantry, require a careful proportioning among the services of individuals according to their age, native intelligence, previous technical education, and physical characteristics. Despite the utmost effort toward full cooperation from 1942-1945, the Army and Navy ended the war with differences in recruiting policies.**

*General Jacob L. Devers*

# Operations Functions

## *In a Communications Zone*

Lieutenant Colonel C. P. Stone, *Infantry*
Instructor, Command and Staff College

DURING the past war, communications zone establishments, like Topsy, just grew. Having no authorized tables of organization and equipment on which to base their composition, and no experience to guide their operations, the functional organization they evolved was the result of many varied factors, including the mission, situation, size of the headquarters, its operational scope, relation to higher headquarters, and the desires of the commander. The development of these headquarters was characterized by two main features: elasticity, to enable the headquarters to adjust themselves to their changing burdens and responsibilities; and flexibility, in order to secure the most efficient execution of their duties.

Because of this lack of standardization within communications zone, no definite policy can be given for the organization of the operations section which will apply to all levels of command. The section is usually organized into subsections, sometimes also referred to as "divisions" or "branches," the number increasing as the size of the command increases. The requirements of the service often influence the number and type of subsections organized. Subsections are given designations corresponding to the duties performed:

Operations, both combat and administrative,
Operational planning,
Training,
Organization.

In large commands (communication zone headquarters) the personnel of the section may be organized into subsections corresponding to the general functions listed above. We may also find a separate subsection organized to handle section administration. As we go downwards through the echelons of command, base, intermediate or advance sections, the number of subsections decreases, requiring the assignment of a combination of duties to each; for example, operations and training subsection. In districts, with limited personnel available, all functions may be handled by a single section, in which case all individuals must be thoroughly familiar with all the duties of the section.

Let us consider the functions of operations sections within communications zone establishments in detail, and analyze the scope of each general function; operations, operational planning, training and organization.

Operations within communications zone may be either combat or administrative in nature. Combat, pertaining to the employment of combat means to protect the personnel and installations within the communications zone, and administrative, relating to the employment of service units to perform their logistical mission. We include under the general heading of operations: defense; troop movements; selection

of bivouac, quartering and staging areas; weather service; liaison; and control of signal communication facilities.

To insure uninterrupted logistical support of combat operations, adequate defense of administrative areas and installations and lines of communication is essential. This defense includes protection against hostile air, naval and ground attack. It is necessary that personnel within the operations section be familiar with the tactical principles governing the combat employment of the various units available within the command for defense purposes. This knowledge is the basis on which recommendations are made for the conduct of operations and the composition of task forces to perform a particular mission.

Ground attack may take the form of airborne or amphibious operations, a penetration or envelopment of front lines, action by guerrillas, or sabotage. Normally unit commanders are charged only with defense against ground attack, in whatever form, and passive air defense. Active air defense and naval defense are provided for the theater as a whole and are responsibilities of the Theater Air and Naval Commanders respectively.

Defense against ground attack may be subdivided into two parts: (1) Local or close-in defense against action by guerrillas, infiltration by small enemy groups, or sabotage; and, (2) general defense against large scale hostile attack. Every unit commander is responsible for the local defense of his own unit and installation; and is responsible that sites chosen for his administrative installations take full advantage of incidental protection afforded by the location of combat units. Communications zone commanders are responsible for the *general* defense of their respective areas. Suitable combat units, preferably highly mobile troops, are assigned the communications zone commander by theater for general defense purposes. In requesting combat troops for such purely defensive missions, communications zone must carefully consider known enemy capabilities, vulnerability of supporting administrative installations, and quantity of troops available in order that sufficient troops may be assigned to carry out the defensive mission within communications zone without dissipating the offensive power of the theater as a whole.

Organization for general defense is usually made on a territorial basis with missions and troops assigned to section commanders. Such commanders will integrate the local defense plans of individual units with the overall defense plan, and will coordinate the overall plan with the plans of adjacent commanders, including air and navy, and, when applicable, civilian organizations.

Defensive measures to be taken by all units will include the construction of defensive works such as foxholes, road blocks, and antitank ditches, the improvement of natural obstacles with such artificial obstacles as minefields and barbed wire, and the camouflage of important installations and areas. To assist units in this work, engineer troops trained to lay and remove minefields and booby traps, to supervise camouflage, and to advise on the construction of defensive works, will be assigned. In addition, ordnance personnel trained to handle delayed-action bombs or dud bombs and shells that may fall near installations, will be made available.

To carry out the plan of defense, the section prepares a detailed plan of operations based on the commander's decision and the general plan. The preparation of these plans call for coordinated action of all staff sections of the command. The operations section must insure this coordinated action in the preparation of plans by arranging, usually through the chief of staff, for frequent conferences.

This detailed plan of operation, after approval by the commander, is made effective

through letters of instruction and field orders by the section for distribution to subordinate commands and units, and to attached and supporting commands.

The movement of units within the communications zone is a responsibility of the operations officer. They will be directed by the G-3 in conformity with the commander's directive and in close coordination with the G-4 and the transportation officer.

Troop movements may be classified as either tactical or administrative. Tactical movements are those made when in contact with the enemy or when such contact may be anticipated. In this case special measures are required. Administrative troop movements are those made when ground contact with the enemy is remote and no special security measures are required. Troop movements, whether they be tactical or administrative, are made by marching by foot, by motor, by water, by air, by rail, and by any combination of these methods. The determination of the particular type of movement to be employed will depend upon many factors, including the availability, suitability, and capacity of the various means of transportation. G-3 is responsible for establishing priorities for movements by the various means available and issues the orders directing the movement.

In the planning and execution of combat and administrative operations, weather may assist or restrict operations by affecting movement, reconnaissance, maintenance, construction, supply, enemy capabilities, health and sanitation, and storage levels and facilities. The operations section works closely with the regional control officer or the director of weather service to insure that the commander is kept informed of the latest weather data and its possible effect on operations.

During operations the section maintains constant contact with subordinate units, adjacent commanders, higher headquarters, and with headquarters of associated services, and keeps its own personnel and the commander informed of our own situation at all times. This contact is maintained through signal communication channels designated in order, through visits by personnel of the section and through liaison officers. Training reception and dispatch of liaison officers, and the preparation and processing of liaison reports are important duties of the operations section.

The operations section must keep constantly advised of the progress of operations. Situation maps may be kept posted up to date and periodic reports are prepared for the commander as required.

By this constant study of our own situation and that of the enemy, the operations section is prepared to submit estimates of the situation when called for by the commander, make pertinent recommendations for the employment of units, foresee probable contingencies and plan in advance of current operations. This brings us to a discussion of operational planning, next on the list of functions.

Operational planning is an important function of the operations section and might have been included under the heading of operations. It will be discussed under a separate heading because we usually find a separate subsection of the operations section charged with planning. Operational planning is a continual process. While one operation is going on the next is being planned. The scope of planning varies with the size of the headquarters and the nature of the operations. It may consist only of an analysis and study of information available in the headquarters, with a view to anticipating the next move and recommending the action to be taken. In this case, as decisions are made by the commander and definite plans formulated, they are passed on to subordinate units concerned as concisely and as quickly as the situation permits.

In communications zone headquarters

planning often requires large scale, long range plans to meet an anticipated situation or operation. More time is involved in such planning. The commander may, for planning of this type, form a separate planning staff. When this procedure is followed the planning staff and the operations section work in close cooperation.

Troop planning, which is an important adjunct of operational planning, is a prominent part of this type planning in a communications zone. It is the process of estimating troop requirements and procurement; and includes anticipatory planning as well as planning concurrent with operations.

In troop planning the number, type and selection of units to obtain a properly balanced force will be based upon the availability of personnel and equipment, the mission to be performed, and the situation including such factors as supported strength, territorial areas, terrain, climate, language, customs and attitude of civilians, potential enemy activity, lines of communication, local resources, prevalence of disease, organization and mission of supported, higher, and adjacent units. Where possible, fixed type service units will be selected for base sections of communications zone and mobile type units for forward areas.

The sources available to meet troop requirements include units assigned to the command, units or personnel made available by higher authority, provisional units organized from bulk personnel allotments, and conversion of surplus units.

The operations section in all such planning works closely with other general staff sections, with the specialist staff group, and with the staff of any associated commands. Combat and administrative plans must be fully coordinated. Frequent conferences are held for an exchange of information and recommendations. The advice of the specialist staff is obtained on matters pertaining to their services.

Training for communications zone units, as for all units, entails the planning and supervision necessary to employ the means and time available to attain the training objective. Operations and training for operations are inseparably related. Experience in the field must be translated into training activities.

Training can be divided into basic, tactical and technical training. Basic training is that training which must be given to the soldiers to enable them to conduct themselves in a soldierly manner, and includes military conduct and discipline, military hygiene and sanitation, customs of the service, and the like.

Tactical training is that training which develops the fighting skills and the knowledge necessary for the unit to engage successfully in combat. For service units this training is given to enable them to protect personnel and property against gas attack, sabotage, and minor raids, to participate effectively in passive air defense measures, and to prepare them for participation in combat operations whenever needed. Part time training is the usual prerequisite for establishing and maintaining satisfactory standards of combat training for service units.

Technical training is that training which develops the skills and knowledge necessary for the supply, evacuation, sanitation, quartering, personnel management and transportation of units of all types, both combat and service. This training is given to units to enable them to perform their primary mission of administratively supporting combat units, as well as the maintenance of their own unit.

All training is a function of command. Subordinate commanders and chiefs of technical services and administrative branches are responsible to their commander for training. Standards are determined by command inspections and staff visits. The purpose of such visits is to insure compliance with training directives,

observe the progress of training, determine the suitability of training aids and training areas, determine any obstacles to training which can be eliminated, to further training progress. Any defects noted in training during these visits should be taken up with the unit commander concerned or with his staff, so that corrective action can be taken. The training subsection can often be helpful to the commander in arranging for betfer training areas, more training equipment, or by eliminating administrative obstacles to their training. It is only by frequent visits and conferences of this nature that the chief of the operations section can keep his commander advised of the status of training within the command, and make appropriate recommendations to him on training problems. These visits however, should not be so frequent as to become a burden to the visited unit or headquarters.

The training subsection is further responsible for the preparation of training directives and training tests, and the reports and recommendations pertaining thereto. Training directives are prepared by the training section for new units joining the command. These directives are prepared in coordination with other general staff sections or the specialist staff for the technical training of units pertaining to their respective services. The chief of training section has an important responsibility in the establishment and maintenance of schools within the command. This includes selection of instructors, preparation of schedules of instruction and the assignment of students.

The information and education and orientation program is closely allied to the training program of the command. In Ground Force units it is the function of the operations officer. In the Air Forces it is the function of the A-1 officer. In communications zone and Service Force headquarters, however, it is the function of a special staff officer who must work in closest cooperation with G-3. The program is designed to promote and maintain in every officer and enlisted man a feeling of individual responsibility for participation in the war, and to strengthen his efficiency as a soldier by increasing his understanding of why we fight. Education gives the soldier an opportunity for study, and information provides a service for the dissemination of current news.

Organization, as it pertains to operations, is the administrative control of troop units. It includes maintenance of troop lists, establishment of priority for issuance of equipment and assignment of personnel, recommendations for changes in tables of organization and equipment, assignments and attachments, and activation, inactivation and disbandment. Commanders should know the units which comprise their commands. It is convenient, therefore, to maintain for ready reference, up to date information on each unit of the command, such as the name of the commander, the location of the unit, the tables of organization under which it is organized, its authorized strength, status and type of equipment, training proficiency and operational experience, and information on any shortages of personnel or equipment that may exist. With this information at hand priorities can be established for assignment of personnel and the issuance of equipment, including priority for the issuance of ammunition based on operational requirements and policies of the commander.

The troop list will often require changes to meet operational requirements. Operational experiences often indicate changes in prescribed tables of organization and equipment, better to meet the needs of the unit concerned. Recommendations for such changes in tables of organization and equipment should be processed through command channels within the communications zone. Headquarters

receiving such recommended changes must carefully study them, and if in agreement, forward them to the next higher headquarters. If the change is disapproved, it will be returned through channels to the originating unit. Pending approval of these recommendations by the War Department, theater commanders may meet temporary requirements of their theaters by authorizing such changes. In preparing such recommendations, all members of the general and special staff must be consulted and action coordinated. Recommendations for changes in equipment, when properly coordinated, often lead to new developments in equipment and weapons.

Theater headquarters will assign units to communications zone headquarters, and will not bypass this headquarters and assign units to sections or districts. It is the task then of communications zone headquarters to assign these units to advance, intermediate or base sections as required. These orders will usually be brief, for example, "Effective 0001A hours, the 561 Engr Gen Sv Regt is assigned to Peninsular Base Section."

Theater will often assign to communications zone the task of activating units to meet their needs either from bulk personnel allotment or surplus units. They may also be called upon to inactivate or disband units no longer essential to operations. These orders are issued by the organization subsection after careful coordination with other staff sections since many of the details involved in the inactivation or disbandment of units are the responsibility of other staff sections and units operating under these staff sections.

In carrying out its functions, the operations section must coordinate its activities with all general and special staff officers. It is only by a proper understanding of the organization and functions of all general and special staff sections that Communications Zone establishments can hope to attain proficiency in staff procedure and technique.

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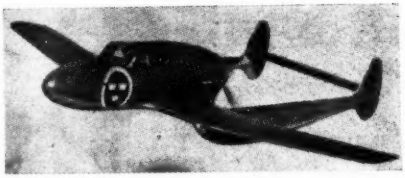
**Mention has already been made of the skill and devotion of our service forces whose efforts, both in the field and at home, made an essential contribution to our victory. To them, and to the civilian workers of factory and farm who provided us with unstinted means, we are forever indebted. Our enormous material superiority gave us an unchallengeable advantage over our foes. While Germany's own war potential crumbled, that of the Allies rose to heights unprecedented. No army or navy was ever supported so generously or so well. Never, during the entire campaign, were we forced to fight a major battle without the weapons that were needed.**

*General of the Army Dwight D. Eisenhower*

# MILITARY NOTES AROUND THE WORLD

## SWEDEN

### *New Swedish Fighter*



One of the domestic fighter designs of the Swedish Air Force is this *Saab* J-21A, a single-seater pusher twin-boom monoplane made by Svenska Aeroplan AB. Span is about thirty-eight feet, and top speed around 403 miles per hour. Plane is also used for reconnaissance and light bombing. A jet-propelled version, J-29 is in the experimental stage.

(*Aviation News*)

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## GERMANY

### *The Largest Cannon in the World*

The largest railway gun ever constructed was found in Germany on a seldom used track between Auerbach and Eschenbaum, Bavaria, shortly before VE-day. It was the super-cannon *Gustave Geschütz* or "Dora," built by the Krupp Works at Essen. It was designed for use against the Maginot forts, but was later used by the Germans to reduce the defenses of Sevastapol. It is not known how many of these gigantic cannons were built nor where the others are now, but it is known that some of them were in use along the Channel coast to bombard England. Two were taken to Germany after the Battle of France and were later destroyed by the retreating Germans when they could no longer move them.

| | |
|---|---|
| Weight of gun and mount | 1,344 tons |
| Weight of projectile | 9 tons |
| Caliber | 800-mm |
| Length of barrel | 32 meters |
| Muzzle velocity, approximate | 2,700 ft/sec |
| Range | 45 miles |

(*A Defesa Nacional*)

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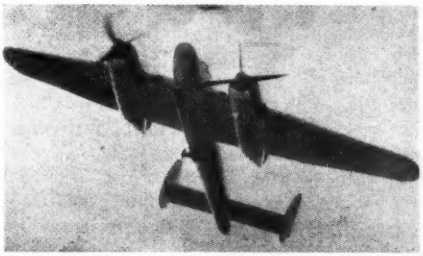
## GREAT BRITAIN

### *Fully Armed Bristol Brigand*



Unusual view of the British Bristol Brigand showing single engine performance with full bomb load including an externally slung torpedo and eight rail launched rockets. The Brigand is built for use as a long range torpedo bomber, mine layer and dive bomber.

(*Aviation News*)

# EGYPT

## *The Royal Egyptian Air Force*

The Royal Egyptian Air Force (REAF) was formed in 1932 as part of the Army. Its first aircraft were "Moths" flown out to Egypt from the United Kingdom by Egyptian pilots with a British leader. The same year the first service squadron, equipped with the "Avro-626" was formed. RAF officers were sent to the Egyptian Army to take command, and RAF warrant officers supervised maintenance. The maintenance personnel were trained at the RAF Depot at Aboukir.

When the new treaty came into being in 1936, the arrangements were altered. A British Military Mission was sent to Egypt and the RAF officers with the REAF formed part of it. Egyptians then took control, and the RAF personnel were employed as advisers, but not in an executive capacity.

At the outbreak of war in 1939, the Royal Egyptian Air Force was mobilized at a strength of five squadrons: No. 1 Army Cooperation; No. 2 Fighter; No. 3 Communication; No. 4 General purpose, and No. 5 Fighter.

For the first year of the war the REAF worked side by side with the RAF. Egypt had its own warning system, and the REAF took a prominent part in that country's defense, but when Italy entered the war, Egypt declared her neutrality. This, the Egyptians affirm, probably with every justification, was due to the fact that Great Britain was unable to supply them with modern arms and equipment. It will be remembered that in 1940 the RAF was desperately short of up-to-date aircraft and was obliged to use Ansons and Gladiators against the enemy, whose aircraft were of infinitely superior performance.

The neutrality decision was a sad blow to the REAF. Its airfields were taken over by the RAF, and it was huddled into a corner of Almaza, now Cairo's airport, could do very little flying, and its morale fell to a low ebb.

This soon recovered, however, when, under the pretext of training, the fighter squadrons were "scrambled" whenever an alert was received on the approach of enemy aircraft, and one squadron was employed on anti-submarine patrol. In addition to this work, the REAF provided a Meteorological Flight that rendered great assistance to the RAF. Also, ten Egyptian pilots were loaned to Ferry Command of the RAF, and were reported to have given excellent service. In spite of its obvious difficulties, the REAF has every reason to be proud of its record during the War.

The present strength of the REAF is about 200 officers and 2,000 airmen, with over 100 aircraft that are being rapidly replaced by modern types. The officers are obtained from the Military College at Cairo, and a number of specialists are sent to the United Kingdom for training. The provision of maintenance personnel provides a difficult problem, but a school for apprentices has been formed at Helouan, and for the present much of the maintenance is being carried out by civilians, who were trained by the RAF during the War.

Those with experience of the RAF Depot at Aboukir in the pre-war years will agree that the native of Egypt shows a remarkable aptitude for aircraft repair work. The Maintenance Unit is at Almaza, and at present consists only of station workshops. In addition to that airfield, the REAF now occupies Dekheila and Helouan. Their Flying Training School comprises initial, intermediate and advanced training units.

*(The Aeroplane)*

# AUSTRALIA

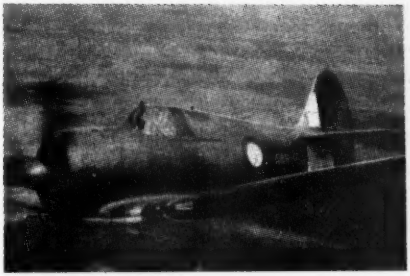
## *Australian Aircraft Production*

It was not until 1935 that the Commonwealth Government made any consequential move towards developing Australia's aircraft industry. In that year, a conference was convened which resulted in the formation of the Commonwealth Aircraft Corporation, Proprietary Limited. It was headed by a group of Australia's leading industrial organizations. A factory was built on a desolate, sandy waste at Fisherman's Bend near Melbourne, and in 1937, work began on an all-metal low-wing monoplane based on designs obtained from the North American Aviation Company, Inc. The first of these machines took to the air in 1939. The plane was called the "Wirraway." Although classed as an advanced trainer, pilots of the Royal Australian Air Force used them valiantly in a futile attempt to halt the first air attack by Japanese Zeros at Rabaul, New Britain, in 1942.

When the Japanese struck at Pearl Harbor in 1941, the Royal Australian Air Force had taken delivery of no fewer than 1,204 Australian made trainer aircraft—449 Wirraways, 675 Tiger Moths (built by De Havilland) and 80 Wackett trainers—exclusive of the first seven Beaufort bombers.

The swift surge southward of the Japanese in 1942 decided the Government that trainer plane production would have to be terminated and that all available capacity would have to be concentrated on the manufacture of operational types of aircraft to supplement whatever supplies could be obtained from the U.S.A. or England.

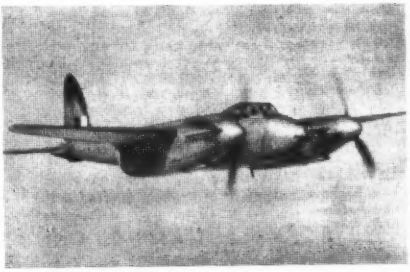
Within six months, deliveries of Beaufort aircraft had reached twenty a month. Meanwhile, the first Boomerang interceptor-fighter, an all-Australian designed and made plane was practically ready for delivery and preliminary work had begun



**Australian Boomerang Fighter.**

on the production of the Mosquito fighter-bomber.

When hostilities against Japan ceased, Australian factories had delivered approximately 3,500 aircraft of nine different types—Beauforts, Beaufighters, Mosquitos, Mustangs, Boomerangs, Wirraways, Wacketts, Tiger Moths and Dragons. Work was also proceeding on other types as well as on motors.



**Australian built Mosquito Bomber.**

Although the scope and postwar activities of the RAAF cannot be determined at this time, the Government intends to maintain an aircraft manufacturing organization capable of meeting likely RAAF requirements and of being rapidly expanded in any future emergency.

*(Australia)*

## UNITED STATES

### *Balloon-Borne Reflectors*

A noteworthy contribution to the science of meteorology emerging from the war is the application of radar to obtain data on the velocity and direction of wind at various altitudes. The method developed by the Signal Corps Engineering Laboratories, employs balloon-borne reflectors which can be tracked to their bursting point, as high as 100,000 feet above the earth's surface.

Wind data can be obtained at heights in the stratosphere that were impossible with the visual-observation method.

In making a winds-aloft observation by radar the target is attached to a hydrogen-filled balloon, which is released and the target is tracked by the radar. The pulsed beam transmitted by the radar is reflected by the target back to the radar receiver as a pulse echo, where it is amplified and indicated by oscilloscopes. The distance of the target from the radar set is shown by the position of the echo pulse on the scope face. The direction of the target is ascertained from the elevation and azimuth bearing of the antenna in tracking. From this data the height of the target may be computed by trigonometry and the speed and direction of the winds at various elevations may be determined.

*(Army and Navy Register)*

### *Army All-Purpose Coat*

The postwar Army has a new all-purpose coat designed to repel water and resist wind. Now under test by the Quartermaster Corps is a new trench coat with removable lining and leg attachments to protect trousers.

With an inner shell of five-ounce poplin and an outer shell of nine-ounce sateen, the coat has a liner of 21.5 ounce napped wool. The leg protectors are made of sateen and can be folded up and buttoned inside the coat when not being used. In use, the leg attachments are fastened with zippers.

The coat weighs seven-and-one-half pounds with the lining and five pounds without it. Eleven sizes of the new garment for both enlisted men and officers are being ordered.

*(Science News Letter)*

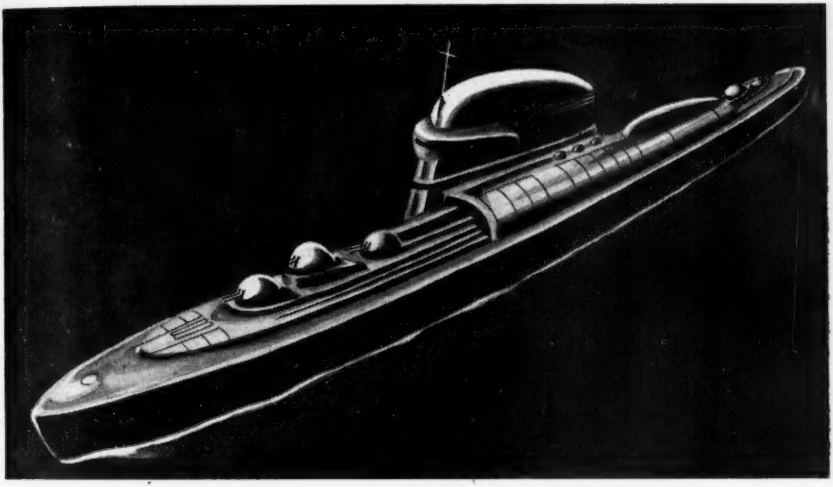
### *Ships Are Changed for Atom-Age Navy*

The United States already is building the world's first atomic age capital ships armed with main batteries of robot rockets instead of guns. The Navy disclosed this in a somewhat terse announcement that the 45,000-ton battleship *Kentucky* and the 27,000-ton battle cruiser *Hawaii* would be "guided missile warships." Both ships were started as conventional design vessels, but construction was arrested when the rockets and atomic bombs of the final phases of World War II marked the advent of a new day in warfare.

It was patent that this announcement marked the end of an era, the age of the rifled gun in the main batteries of American naval ships. That gun came into general use by the Navy soon after the end of the Civil War.

Naval designers, talking informally, pointed out that the destructive power of capital ships can be increased enormously by use of far-reaching missiles homed to the target by electronic beams or drawn there by the attraction of the steel or heat in the target itself. And, the designers add, the advent of the rocket with the atomic blast warhead is just around the laboratory corner.

Although the principal weapons of the two big fighters will be a drastic departure from the traditional arms, there is no indication that atomic power plants have reached the point where they can be installed as propulsion units in vessels.



**Artist's conception of Atomic Age Battleship.**

Both hulls have conventional design power plants.

However, lessons learned from the atomic bombs exploded against the fleet at Bikini undoubtedly will influence superstructure design. The result may be emphatically streamlined topside structures designed to reduce the effect of the enormous wide-area pressure produced by atomic blast.

The *Kentucky*, an Iowa-class hull started in 1944, is seventy per cent complete. Photographs show work has progressed up to her main deck, with propulsion machinery installed. Design changes from that point on will present no difficulties.

The *Hawaii*, laid down in 1943 as a sister ship of the battle cruisers *Alaska* and *Guam*, is eighty-three per cent complete. Stacks and some light superstructure are in place, but it was explained this could be removed or modified with ease.

(*From a news report*)

## Fog Turned to Rain

Sound waves that convert fog into rain may be used instead of war-time flame vaporizing systems to keep future landing fields clear for aircraft.

During the war the British developed the important Haigill system, that permitted Allied aircraft to land at bases in Britain in severe fog. The principle used is that of vaporizing the fog by intense heat from controlled fires lining landing strip runways.

Disadvantages of Haigill include the high cost, as much as $4,000 or $5,000 to land one plane, since high-octane gas was used as fuel for flames. Although this cost was small compared with the lives and equipment saved during the war, intensive research has gone into modifications of the system.

Probably the best thermal installation for clearing fog from airports is "Elmer," a vaporizer which can reduce fuel

costs for a landing to as little as $150. "Elmer" can burn gasoline, kerosene or diesel oil and has an atomizing nozzle with electrical heating elements for igniting it instantly. Haigill systems burned more expensive fuel and required two minutes of "warm-up" for effective operation.

While the Navy experimented with "Elmer," it also started an investigation of sonic fog clearing. The first tests worked well against fog but created new problems.

A battery of twelve powerful air-raid type sirens with 24-foot wooden amplifying horns blasted a heavy fog with enough force to merge the fog particles into raindrops that fell to earth, clearing the overcast above the landing field. Personnel on the field had cotton in their ears, with a sponge rubber covering the outside. They reported no ear trouble, but most of them became nauseated from the intense sound.

The powerful sirens also proved to be more effective than a hunter's horn, as several birds were blasted out of the sky by the noise.

Now experts at the Navy's Landing Aids Experiment Station believe that the answer is in the use of ultra-sonic transmitters sending out waves at such high frequencies that men and animals won't be able to hear them.

The problems that sonic engineers hope to answer with full-scale experiments are the possible effects of the sound blasts on personnel in planes and the danger of damaging aircraft by the powerful waves.

If the tests are successful, naval officers believe that high-frequency sound systems will be more practical than thermal fog dispersal. A sonic system would have approximately the same initial cost as flame installations but could be operated more economically. For naval use, the sound system may be developed for aircraft carriers. Now being investigated, sonic installations on carriers would enable the big ships to improve their own weather under adverse flying conditions.

(*Science News Letter*)

### *Jet Future for Aircraft*

Jet power for all future American high-performance aircraft was predicted with the announcement that the Army Air Forces has given the green light to General Electric's Aircraft Gas Turbine Division to manufacture all present designs of jets and speed development of new and more powerful designs.

The chief engineer for General Electric forecasts that high-speed gas turbines may largely replace conventional airplane engines "in the next ten years."

He predicted that jet engines propelling commercial planes at 500 to 600 miles per hour will be forthcoming, and for the future, jet-propelled aircraft may speed at 1,500 miles per hour to altitudes as high as fifteen miles with engines of as great as 10,000 horsepower.

Pointing out that the speed danger zone lies between 600 and 700 miles per hour, the jet engineer declared that an intensive program is under way by government and industry to send speeds above that of sound.

Although gas turbines require oxygen to operate, altitudes of 60,000 to 80,000 feet, where there is still some oxygen, might be reached.

Once jet speeds have broken through the wall of sound's speed, he pointed out, ram jet, the "flying stovepipe," might replace gas turbines.

"Then," he concluded, "if we are to fly higher and faster, we will depend upon rocket planes, which will break through the earth's atmosphere—100 miles up—at speeds between 3,000 and 4,000 miles per hour, which are not physiologically unreasonable.

(*Science News Letter*)

# FOREIGN MILITARY DIGESTS

## Sea Power—or Impotence?

**Digested at the Command and Staff College from an article by Francis McMurtrie in "The Navy" (Great Britain) August 1946.**

IS the strength of the Navy being maintained at an adequate level? In the event of another emergency, would a sufficient number of ships be available in every category, not merely to secure the country against invasion, but to protect its seaborne trade, without which we must surely perish?

History affords abundant evidence that, following a great war in which national resources have been strained to the utmost, there is invariably a tendency for politicians to effect unwise economies at the expense of the Services. Particularly was this so after the triumphs of the Seven Years' War, with the result that between 1778 and 1783 we found ourselves fighting with our backs to the wall. On that occasion neglect of sea power cost us the American colonies, which seceded to form the United States.

Some readers may recall that in 1909, when introducing the Navy estimates for that year, the First Lord found it necessary to ask for authority to increase the program of new construction from four capital ships to eight should the international situation become more critical. This immediately produced a public demand for the authorization of the larger number rather that the smaller, and the Government ultimately yielded the point. How sound was the instinct that insisted on a full margin of safety was proved two years later when the Agadir crisis threw a stronger light on Germany's naval ambitions. All eight ships fought at Jutland.

From 1919 to 1933 the Navy was allowed to decline in the complacent belief that no harm was likely to come of it. Not only did we fail to build sufficient new ships to replace those discarded as worn out, but trained personnel were reduced in numbers to a corresponding extent. Stocks of munitions and stores were permitted to fall below the safety margin deemed essential earlier in the century; and ships were given such an inadequate fuel quota each year that it was impossible to carry out exercises with any degree of realism, or indeed to give ships' companies adequate training at sea. Ammunition became so scarce that at one period gunnery practice could be carried out only with reduced charges and at infrequent intervals.

So far as naval construction was concerned, this feeble policy was bolstered up by the signature in 1922 and 1930 of treaties which limited the tonnage of the principal categories of warships and postponed unduly the dates of replacements of obsolescent units.

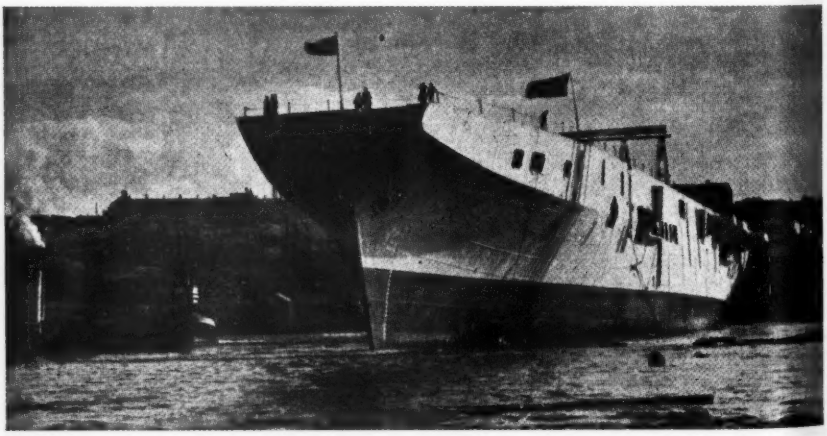
Inevitably it followed that, when war with Germany was renewed in 1939, the fleet was relatively much weaker than it had been in 1914, containing, moreover, a

high proportion of old ships. In the circumstances one must feel thankful that our foes were not all prepared to strike at the same moment. Italy did not declare war until nine months after Germany, while Japan took the plunge eighteen months later still. Each accession to enemy strength produced an acute crisis, because of the deplorable lack of foresight in the years between the two conflicts.

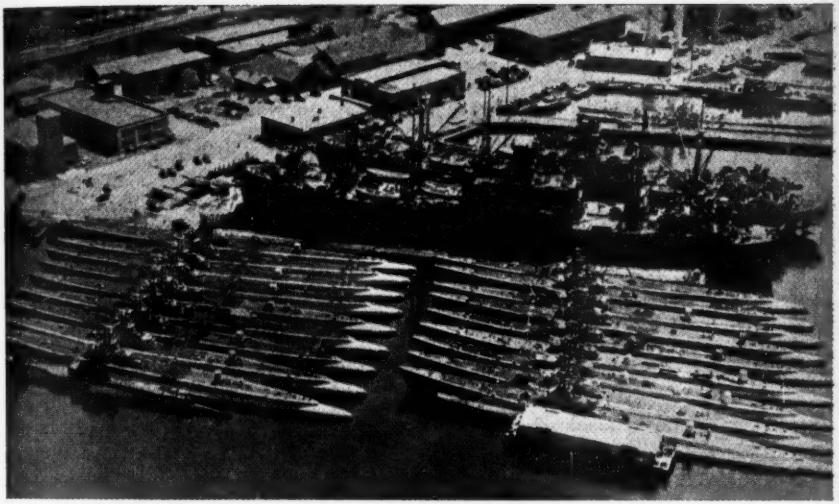
When Italy hastened to join what she fondly imagined to be the winning side, the Navy had just completed the evacuation of the Army from Dunkirk, minus most of its equipment. This remarkable feat had been accomplished at heavy loss in naval material, over a dozen destroyers having been lost and four or five times as many disabled. We were immediately called upon to face a reinforced and more widely based submarine campaign against shipping, with escort forces further depleted by the collapse of France. Yet by superhuman efforts this fresh menace was ultimately held, while in the Mediterranean, bold and seamanlike handling of our inferior naval forces proved Mussolini's phrase *Mare Nostrum* to be a baseless boast.

One of the deciding factors in the Atlantic was the acquisition from the United States, three months after Dunkirk, of fifty destroyers built in 1917-20, in exchange for a long lease of bases in various British possessions overseas. It must be reckoned fortunate that the Americans, by refraining from cancelling or scrapping these ships twenty years before, had shown themselves wiser than the rulers of this country at that time.

After the United States Navy had been temporarily immobilized by the Pearl Harbor attack, and we had simultaneously been deprived of the only two capital ships that it had been possible to spare for the Far Eastern theater (HMS *Prince of Wales* and *Repulse*), the situation seemed even grimmer. The loss of Singapore and Hong Kong, followed by the Japanese victory in the Java Sea, appeared to lay



**HMS *Hercules* to be laid up for an indefinite period.**



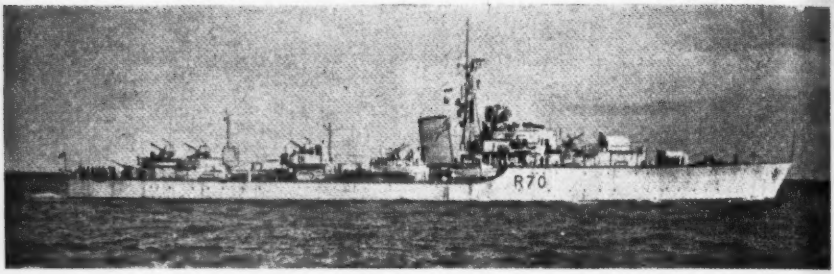
**Warships in reserve. U.S. submarines and tenders laid up at a submarine base.**

Australia open to invasion, with all the implications arising from our inability to afford immediate assistance. Worse still was the aspect soon taken by the Battle of the Atlantic. Never were shipping losses so heavy as in the first half of 1942. Never were we in greater peril on the sea.

At all costs, the possibility of such situations recurring in future wars must be avoided. There are a few truer analogies than the one which regards a strong navy as a comprehensive insurance policy: for in war and peace alike, the British Empire lives or dies by the sea.

Taking each category of warship in succession, the position today is believed to be as follows:

*Capital Ships*: In 1939 there were fifteen; five more were completed during the war, but losses also numbered five. One, HMS *Royal Sovereign*, was transferred to the Soviet Navy under the Lend-Lease scheme. Another, the *Warspite*, received such extensive damage from bombs and mines that she is now being scrapped. Of the remaining thirteen, four (the *Malaya, Ramillies, Resolution* and *Revenge)* have been relegated to harbor service, being used as accommodation and training ships. The *Queen Elizabeth, Valiant, Nelson* and *Rodney* are too slow for the modern line of battle, so may be scrapped, laid up in reserve or assigned to training duties. HMS *Renown*, our surviving battle cruiser, though she still has a fair turn of speed, is sufficiently protected. This leaves four battleships, the *King George V, Duke of York, Anson* and *Howe*, that are equal to the requirements of today. To these there has recently been added the *Vanguard*, largest man-of-war ever built by this country. Even she is armed with guns designed before World War I. Four other battleships authorized in




**HMS *Solebay*, a destroyer of the *Battle* class.**

1938-39 were subsequently cancelled. For practical purposes, therefore, the British battle fleet has been reduced to one-third of its pre-war strength.

*Aircraft Carriers:* Admittedly the aircraft carrier has become all-important to the fleet of today. One would expect, therefore, that reductions in other categories would be more than balanced by an increase in this one. Yet this is by no means the case.

At the start of the war British aircraft carriers numbered seven: HMS *Ark Royal, Courageous, Glorious, Furious, Eagle, Hermes* and *Argus*. All of these were lost with exception of the *Argus* and *Furious*, which have since been discarded for scrapping. Fleet carriers built during the war numbered six: the *Formidable, Illustrious, Victorious, Indomitable, Implacable*, and *Indefatigable*. Those completed since number eight: the *Colossus, Glory, Ocean, Theseus, Triumph, Venerable, Vengeance* and *Warrior*—the first of which, it is understood, is being lent to the French Navy for a few years. Thus the number of fleet carriers available has merely been doubled. Under construction are twelve more, the 33,000-ton *Ark Royal* and *Eagle*, and the smaller *Albion, Bulwark, Centaur, Hermes, Hercules, Leviathan, Magnificent, Majestic, Powerful* and *Terrible*. When all are in service we shall have three and a half times as many fleet carriers as in 1939, compared with the American expansion of four and a half times during the same period.

Unfortunately, construction has been slowed up on all the incomplete carriers. Two at least, the *Hercules* and *Leviathan*, having been launched, were towed away to berths where they will be laid up for an indefinite period, pending a decision to resume work. Naturally, this gave rise to the suspicion that it was intended to scrap the ships—especially as nine other fleet carriers ordered during the war (three of them of exceptionally large size) had been cancelled when peace was in sight.

*Cruisers:* Here the situation is so serious that it is remarkable that more has not been heard of it. Beginning the war with sixty-four cruisers, we built thirty more, but lost an equal number. At least fifteen have been, or are about to be scrapped; half-a-dozen more have been earmarked for transfer to allied navies. There are only three or four new cruisers under construction. If and when these are completed we shall possess no more than forty-four. It seems clear, therefore, that the figure of seventy cruisers, which Earl Jellicoe considered the absolute minimum re-

quired for the protection of commerce, has been abandoned, though it was adopted officially in the Defense White Paper of 1936.

During the same period, be it noted the United States Navy has thought it necessary to increase its establishment of cruisers from thirty-seven to seventy-seven. So evidently Americans do not think the advent of the aircraft carrier has rendered an ample cruiser force superfluous.

*Destroyers:* Entering the war with just under 170 destroyers, we lost 138. After acquiring fifty from the United States as related above, and building over 200, wastage through scrapping and transfers to Allies had been so considerable that the number available when existing programs are completed (excluding the "*Hunt*" classes, the life of which is likely to be short) will be under 150. Particularly unfortunate is the cancellation or scrapping after launching of a number of units belonging to the "*Battle*," "*Weapons*," "*Daring*" and "*Gallant*" classes. Surely it would have been more prudent to have completed and laid up these vessels, as was done with the American destroyers a quarter of a century ago, since it was the shortage of these invaluable craft that brought us to the verge of disaster in 1940.

An argument sometimes used to excuse such "economies" as the foregoing is the existence of the atomic bomb. Not only is this weapon at present controlled by our principal ally, with whom war is generally regarded as unthinkable, but it is extremely expensive to manufacture, without possessing any superiority so far as accuracy is concerned, over other bombs. Naval opinion on the subject was summed up recently by the First Sea Lord, Admiral Sir John Cunningham, who observed:

"Because an atom bomb has had great success against battleships anchored in a tropical lagoon, and pinpointed to an exactitude of a few inches for the attacking bomber, do not let us think that has solved the problem.

"The effect, of which we are most conscious, is that the advent of the atom bomb increases the necessity for the dispersion of bases and repair facilities and all supplies. As regards its effect on ships, we have considerable experience from anti-submarine work on how close to a ship you have to put a large explosion, in order to achieve the desired result. Atomic explosions are greater than anything else, but it may be—I do not say it will be—that the safest place in the next war will be on board a ship.

"Remember that the atom bomb as we know it at present has still got to be carried to its target and dropped by an aircraft; and in the problem of interception and attack of aircraft all three Services have attained a considerable proficiency. I do not think that proficiency is likely to decrease—rather the reverse." Though the atom bomb may be a legitimate argument for some delay in the completion of ships while designs are being modified, it should not be employed as an excuse for cancelling or scrapping new construction. And history has proved it to be an unsound strategical conception to assume that, because there are no enemies immediately visible, the nation may safely dispense with ships which could not be replaced in emergency.

# Security of Flanks and Limiting Points

**Translated and digested at the Command and Staff College from a Russian article by Major General G. Perventsev in "Krasnaia Zvezda" (U.S.S.R.) 18 July 1946.**

FLANKS and limiting points are extremely vulnerable places of a defensive position. The front of the position is usually defended by the main body of the division, while a much smaller force is detailed for the defense of the flanks. Furthermore, it is impossible to concentrate the fire of all available weapons on the flanks of a unit. Therefore, the density of fire is much lower here than directly in front of the position. All this means that it is most advantageous for the attacker to outflank the position, and this he does every time the situation so permits.

When a strong attack is delivered through the area of the limiting point, and consequently on the flank, the latter, for purposes of defense, is usually bent in. This bending of the flanks often opens a breach for the attacker, helps him effect a breakthrough, and separates one defending unit from its neighbor.

The experience of this war shows that insufficient security of flanks and limiting points often creates a difficult situation for the defender. In October of 1941, for example, one of our infantry divisions occupied a defensive position west of the city Kirov (near Kaluga). Its right flank was in the forest in the vicinity of a farm, and the distance from here to the left flank of the neighboring unit was approximately four kilometers. For the defense of this gap the two neighboring divisions detailed only one rifle company from each unit. Artillery security of this area had not been properly worked out, and only two batteries were ordered to cover the gap.

The enemy attacked in the morning, and during the day all his frontal assaults were repelled. In the evening, employing small groups, the Germans began reconnoitering to locate the flanks of the division, found the weak spot at the limiting point, and attacked through it. After a short engagement they broke through in the direction of Kirov, thus placing the defending units under the threat of being enveloped. As a result, the division had to withdraw.

A good example of a well-organized defense of flanks and limiting points was the famous defensive battle in the Kursk salient in July of 1943. It was no accident that the German shock troops were routed, that the Soviet troops delivered a powerful counterblow, and successfully carried out a large-scale offensive operation. The secret of success in this case was due to the proper observance of the fundamental regulations of the Red Army which insist on the security of limiting points. These regulations require division commanders to detail certain officers to be responsible for the limiting points and to check personally or through their staffs on the plan of fire in the most vulnerable sectors of the position.

What, then, shall we do to make our flanks and limiting points secure? Battle experience suggests that this can be achieved by the organization of uninterrupted reconnaissance and continual observation of the enemy in the vicinity of the limiting points. Reconnaissance and observation enable us to learn much about the enemy and his intentions, to undertake proper countermeasures, and to prepare ourselves in time for action at the limiting point.

When a position has natural obstacles on its flanks, such as rivers or impassable swamps, the defender has considerable advantages, but even here the com-

mand must undertake other measures for the security of the flanks, since it is well known that any impassable terrain can, in the end, be passed by the attacker.

The most effective method of securing flanks is a carefully prepared artillery, machine-gun, and mortar fire-plan which provides sufficient density and forms cross-fire at the limiting point by means of fires coming from the neighboring units. As a rule, this fire is strengthened by the erecting of antitank and antipersonnel obstacles in front of the main line of resistance.

Antitank defense is particularly important. For this purpose the neighboring units employ some of their antitank guns and direct-laying guns from their divisional artillery. These are so emplaced in the vicinity of the limiting point that the fire of the guns covers both the area in front of the main line of resistance and the position itself. In addition, the fire of the antitank guns and of other guns assigned to the antitank defense is closely tied in with that of the artillery. In each case, it is important to determine the width of the overlay of two fire zones, which should be at least one-third of each zone.

All these forward guns are dug in, and are covered by groups of infantrymen using small arms. These men are stationed in groups of two or three, from two to four hundred meters in front of each gun.

In order to prevent premature neutralization of the antitank guns by the fire of the enemy, it is necessary to observe certain rules of fire discipline. During attacks, while trying to detect the location of the firing positions of our artillery, German tanks often opened fire at long ranges (1.5-2 kilometers) from stationary, half-concealed positions, and sometimes succeeded in having our antitank guns open fire prematurely. Combat experience shows that the guns assigned to the defense of limiting points should open fire at the following ranges: 45-mm guns at not more than 500 meters; 57-mm, 750-1000 meters; and 76-mm (division artillery guns), 800-1,000 meters.

At the limiting points between regiments or divisions, mortar and artillery fire should be organized on the spot. All additional sectors should be assigned not mechanically, but depending upon the terrain and taking into account the amount of artillery available. Infantry weapons (heavy and light machine guns and antitank rifles) are used in coordination with the fires of the artillery, but in all cases it should be attempted to secure the limiting points by means of flanking fire from both neighboring units.

In building our positions, we always strived not to have a breach between our trenches and those of our neighbors. Units occupying the flanks dug all the trenches near the limiting point and connected their first, second, and subsequent trenches with those occupied by the neighboring divisions and regiments. On the basis of the same principle of continuous defense we erected continuous mine fields and wire entanglements in the area of limiting points. The continuity of all defensive works fully justified itself. The units defending such positions were able to maneuver not only their man power, but also their artillery without leaving the trenches.

Continuous trenches and continuous obstacles combined with switch positions enormously increase the safety of flanks and limiting points, provided the switch positions are selected correctly from the tactical point of view and are prepared and equipped simultaneously by both units. The important point here is to build these positions so that they may serve as defensive positions, as

well as lines of departure for counterattacks launched by the reserve.

The above mentioned measures do not exhaust the list of works carried out at the limiting points. In addition to switch positions, our troops always built special positions and antitank obstacles in the depth of the limiting point area, which were occupied during decisive moments of the battle by the mobile antitank reserve. It carried the main burden of preventing hostile tanks from penetrating into the depth of our defense.

Reserves in this type of fighting played a double role. Whenever the area was invaded by groups of hostile infantry, the reserve counterattacked and destroyed them. But when the enemy committed large forces and especially tanks, the division reserve acted differently. The infantrymen naturally could not successfully counterattack tanks, but having dug-in in the switch positions, they could engage the enemy in a fire fight and check him until the arrival of our tanks and other infantry units.

The division reserve accomplished its mission successfully only when it reached the switch positions on time. Therefore, the selection of the area for the reserve is extremely important. Ordinarily, while preparing for defensive action, we carefully checked these areas and engaged in special training exercises, the purpose of which was to teach the reserve how to reach the area af the limiting point. We alerted the units and determined, through the use of chronometers, whether or not the reserve had enough time to reach the switch position by the predetermined time.

During the war the following procedure was used by the commanders of adjacent divisions. They usually met at a certain place accompanied by the chief of division artillery, chief engineer, chief of operations, reconnaissance officer, chief of signals, commander of tank units assigned to the area of the limiting points, commander of the mobile antitank reserve, and the commanders of the units defending the limiting points. During this meeting, the commanders worked out cooperative action for the repelling of enemy attacks, established procedures for mutual information and communication, and prepared a special plan of defense for the limiting points. This plan was really an overlay embracing all measures for the security of limiting points for all possible variations in the action of the enemy. This was accompanied by a special statement. This statement and overlays were signed by all officers who had participated in this work. Two copies of the overlay and of the statement were retained by the units, and one copy was sent to the higher commanders. These documents were added to the general plan of defense. Furthermore, higher headquarters organized control and assistance for the units cooperating at their limiting points. Specially detailed officers checked the progress of fortification works and the organization of fires.

Battle experience proved that well-protected flanks and limiting points, although seemingly vulnerable, cannot be breached by the enemy.

but they were far from sufficient for insuring the powerful, rapid and flexible fires contemplated.

Thanks to their previous studies, lessons of the first two years of war, and enormous industrial capacity, the Americans from the very outset prepared their artillery for battle by endowing it with the most modern equipment capable of giving maximum efficiency. Nor were the British inactive. Ceaselessly they transformed or perfected all the apparatus employed in their signal communications, detecting devices, and artillery equipment. The Russians also built up a formidable artillery, " The God of Battles."

After 1943, the French artillery was, for the most part, patterned on the American type. Guns, motor vehicles, signal equipment, observation planes, and radar were furnished by the United States. This arm adapted itself with utmost rapidity to its new equipment, taking full advantage of the remarkable improvements made by the Americans, and putting it into operation in accordance with a doctrine of employment it had long been acquainted with, but whose complete application had theretofore been prevented by our own paucity of means.

The considerable development in both quality and quantity of radio-telephone apparatus was certainly the principal element responsible for the effectiveness of its action. Thanks to this method of signal communication the concentration of fire of a large number of groups could be ordered and effected with the greatest ease. Mass effect was thus realized to the desired extent and at the desired moment.

As a result of the radio, the formidable problem of liaison between infantry and artillery has at last found its solution. Direct support groups are constantly aware of the needs of their infantry and are able to satisfy them instantly. Successive bombardments according to a predetermined schedule and a predetermined target are now replaced by fire "at the request of the infantry," which is better paying since it can be provided at the opportune moment. Thanks to this incomparable means of signal communication, the artillery achieves absolute independence between its observation posts and battery positions. The advanced observers in the ranks of the infantry supplement the artillery liaison detachments with the battalion and regimental commanders. Even though the current practice of dispatching "liaison and observation detachments" to the infantry is not new (the 1913 regulations prescribed it), full effect was attained by these detachments only after they had instant and reliable means of communication at their disposal.

The general employment of radio communication has, lastly, rendered possible a change from centralization to decentralization of the artillery—the centralization required for attack operations such as breakthroughs, or the decentralization required for exploitation and pursuit action.

Another factor, however, has facilitated greatly the resumption of control over scattered artillery and its reinforcement by units coming from the rear when the enemy attempts to stand during a pursuit. This is the complete motorization of the arm. The placing in the line, the engagement of reinforcing groups, and alterations in the disposition of artillery already deployed are effected with a minimum of delay through the happy combination of motor traction and radio signal communication. A violent blow can thus be delivered against the center of resistance to which the enemy is clinging. This matter attended to, the necessary artillery is again attached to the formations engaged in exploitation, while the reinforcing batteries, now unemployed, are left where they are.

In the technical field, the split-trail mount has been applied to all our towed guns. They are thus able to cover a 45° sector without change of position. Concentrations follow rapidly against targets scattered over broad zones.

To this broad field of horizontal fire is added a vertical field of fire, which gives these guns all the advantages associated with such a field in attacks on

**Self-propelled 155-mm howitzer.**
**(Signal Corps photo.)**

strongly defiladed targets. Another advantage associated with this type of fire is the considerable simplification of the search for artillery positions. The problem of a mask, a matter of prime importance in the case of weapons of flat trajectory, is practically absent. The main point to be considered in reconnaissance for battery positions will generally be that of accessibility.

We have spoken of the great flexibility imparted to maneuver as a result of the complete motorization of artillery. Additional progress has been made in this regard by the 105-mm self-propelled howitzer in the armored divisions, by the 155-mm G.P.F. gun, etc. The ease with which they are able to go into battery and change position, elimination of dependence on a tractor, and 360° field of fire, constitute the principal advantages of self-propelled artillery. This represents the future solution for all pieces of artillery, both light and medium.

We cannot leave the subject of modern artillery equipment with which the French batteries have been supplied without mention of the excellent precision of its fire at all ranges. The shape of the projectile, even though it may not represent any new principle, is not without its influence on precision.

In this connection, the famous electromagnetic fuze detonator which has revolutionized the methods of timed-fuze fire, rendering such fire unnecessary since this fuze operates automatically at the most effective height above the target.

Thus, highly developed radio means, and artillery which is modern from the standpoint of its guns, ammunition and traction, have given artillery the characteristics of mass employment and opportuneness that have always been sought. But this is not all. Old but improved apparatus, as well as apparatus that is entirely new, has provided the artilleryman with greatly augmented means to discover targets and adjust fire.

The artillery observation plane, which the inspector-general of the artillery asked for as far back as 1936, has become the constant auxiliary of the batteries. It belongs to the commander of the group in the same way as the guns. A colonel in command of an artillery regiment in 1914 possessed two planes which, in a way, were his own personal property and which accompanied his regiments and rendered most valuable service in the first battle.

It is obvious that radio communication between the aerial observer and the gunner on the ground has replaced the prim-

itive method of communication by means of signal strips, and rudimentary radio telegraphy.

It is obvious, also, that the employment of the artillery observation plane is not without its limitations, and that it is bound by certain precautions relative to air activity of the enemy. Hence, it would be imprudent to regard as normal those missions which only the lack of enemy air power had rendered possible. But it is true that artillery could never again operate without its observation planes.

Determination of the position of enemy batteries by sound has also been greatly improved. Electro-magnetic detection devices, completely revolutionized all previous conceptions of target discovery. At first an indispensable auxiliary of antiaircraft defense, radar was later successfully applied to the location of ground targets, especially batteries and mortars. We may assume that nothing will prevent the adjustment of the fire of our own batteries by radar, on the targets thus discovered. Electro-magnetic detecting apparatus is certainly not at the end of its development.

We should hope that the line of demarcation between artillery and the antitank weapon has again been reestablished. Whether carried by the infantry or by the armored vehicle, the antitank weapon employs a technique which is quite different from that of traditional artillery, and it is only as a result of chance or lack of proper means that certain pieces of artillery and certain antitank guns are interchangeable.

Provided amply with radio equipment, improved guns and perfected fire control instruments, the artillery fits well with the definition given it in the "Instructions Concerning the Tactical Employment of Large Units" (1936).

But does this mean that it should crystalize in this form? The answer is obviously no. It is necessary to keep abreast of the changes in its armament, particularly, those changes resulting from the employment of rockets.

The artillery is characterized by its precision and its permanence. It owes its precision to the progress made in its weapons and its ammunition. When deployed and provided with ammunition, it constitutes a permanent form of fire power. It is an "ace-in-the-hole" for the commander, because as long as it possesses ammunition, it is never spent. It is constantly at his disposal.

**A modernized G.P.F. or 155-mm gun. (Signal Corps photo.)**

Aviation is no longer in the stage of uncertain bombing attacks. It is able to place its bombs with a precision that is sometimes superior to that of the cannon, but its action is intermittent. Its engagements involve delays that are unknown to artillery in position. Though it may possess precision, it does not possess permanence.

Inversely, jet-propelled projectiles possess the same permanence as artillery provided there is a constant supply of projectiles. At the present stage of their

development, however, they are inaccurate. The Americans, who have organized groups armed with rockets, insist that these units are not suited for any type of fire except that over broad and deep zones, and that they are, therefore, unsuited for firing against targets of small dimensions. At the present time, the range of rockets constitutes a discontinuous series. There is a considerable gap

**Rocket launchers are lightweight and often crude. (Signal Corps photo.)**

between the maximum range of the short-range projectiles (six to eight kilometers) and the minimum range of the long-range projectiles (150 to 200 kilometers). A large part of the battlefield thus escapes the action of these rockets.

Precision which is now lacking in self-propelled projectiles may be attained either by the adoption of methods of remote control or by means of automatic control. Continuity of ranges may also be obtained, and it is possible that guns will gradually yield to rocket projectiles. In such a case, the artillery will simply have changed its equipment. Its field of action will, at the same time, be greatly enlarged by reason of the considerable range of some of its new equipment.

The first stage of the progressive transformation of the artillery that can be discerned appears to be the employment of the cannon on the one hand, and the self-propelled projectile on the other. Accurate fire remains the work of the cannon and zone fire is reserved for the rocket projectiles. One may imagine the development of self-propelled projectiles fired by cannons, which would increase the precision of the former.

It does not seem, however, that the general employment of rocket-propelled projectiles should result in any great reduction in the personnel of the artillery. The personnel lists of a *Nebelwerfer* or a rocket unit reveal but a slight decrease as compared with those of a similar unit armed with cannon. The requirements in supply personnel will absorb a large number of men, and will necessitate the use of large supply trains. As a matter of fact, the self-propelled projectile combines ammunition and means of propulsion in a single piece of apparatus. It is, in a way, both gun and projectile at the same time. In itself it is very heavy, although it makes use of light and relatively rudimentary launching equipment. It may even do without any launching means, but is only more cumbersome as a result. As for the quantity of projectiles used, it will be about the same as in artillery for the commoner calibers at least.

The cannon also is heavy, but it is moved once to a given position. Its ammunition weighs but a small fraction of the weight of the gun, and the tonnage involved in its supplies represents, almost in entirety, the explosive and the steel that will be fired onto enemy targets. The same tonnage applied to rocket-

projectiles will be far from representing the same effective results. It will include not only the projectiles but also the fuels necessary for propulsion, the latter constituting a considerable proportion of the weight of the projectiles. Therefore, in order to obtain a given effect on a target, the supply of self-propelled projectiles will require a number of vehicles far in excess of that needed for transportation of the ammunition of artillery.

It is well, also, to consider the difficulties that the large-scale manufacture of rocket projectiles of all calibers could bring up, difficulties which cannot yet be foreseen.

It is only fair to call attention to the fact that the effects of the rocket projectile are superior to those of the cannon projectile, for rocket projectiles do not require as great a thickness of metal as compared with that required in an artillery shell.

The employment of self-propelled projectiles opens very broad perspectives. One can easily imagine how such devices, observed by radar over the whole length of their trajectory, may be guided by remote control to their targets. We can also see the possibilities offered by television associated with remote control.

One may imagine the revolution that could occur in antiaircraft fire by the employment of rocket projectiles moving at the speed of sound and guided to their targets by remote-control—or even automatically guided.

All efforts must be bent to the improvement of the self-propelled projectile. We must study its ballistics and experiment with chemical agents whose reactions may be employed for propulsion in order to reduce the total weight of the projectiles and secure a continuous series of ranges corresponding to the various types of these devices. Above all, we must impart to the self-propelled projectile that precision without which it cannot completely take the place of the cannon.

Whatever the armament may be for future artillery, the doctrine of employment will remain fixed. Mass employment against a given zone at the opportune moment will always be the rule. There should be nothing surprising in this for it is the application of the principle of economy of force applied to the plan of fire.

It may be imagined that artillery may make use of projectiles of considerable power when atomic energy is tamed. We have not yet reached that stage, but it is not impossible to look ahead to the day when there should be atomic artillery similar to that used at present, with the exception of the fact that the explosive contained in its projectiles will be nuclear and capable of handling certain counterbattery, interdiction and harassing fire missions. We may reasonably conceive that for close support fire for the benefit of the friendly infantry, we will be obliged to use normal explosives only. But whatever the perspective we are reasonably able to perceive, it must be noted that the present characteristics of atomic devices do not permit our looking forward to their employment by the artillery in the immediate future. The problem of support and protection, of counterbattery and interdiction will continue to require the use of traditional artillery.

# The Second Air-Ground Battle of Holland

**Translated and digested at the Command and Staff College from a Portuguese article by Captain Geraldo de Menezes Côrtes in "A Defesa Nacional" (Brazil) August 1946.**

## Introduction

THE second battle of Holland was a brilliant, concrete example of the high degree of effectiveness the Americans and British were able to impart to air-ground operations, surpassing the originators of this type of operation. The Russians, originators of parachute forces, found themselves forced to employ them in small numbers only during the invasion of their country. Even after the crisis had been passed and the counteroffensive had been launched, they were never capable of engaging in a large-scale airborne operation. There is no question that the Germans were the first to employ airborne operations on a large scale, but they never repeated the undeniable success of Crete. Once she had lost her supremacy in the air and became obliged to conduct a defensive type of warfare, Germany was forced to employ her paratroops in ground operations as normal divisions.

In the study of the airborne operations, we come to the conclusion that while the originators retrogressed, the British and Americans developed and perfected their technique until they were able to carry out the great parachute and glider-borne troop operations that occurred during and after Operation Overlord (the invasion of Normandy). Perhaps the largest scale operation was the one dealt with in this article.

## The Antecedents of the Operation

Operation Overlord was under way. It was moving out of Normandy. Several air-ground operations had been planned, but so rapid was the advance that plans rapidly became a thing of the past. One of the airborne divisions, the 1st British, received successively sixteen different "preparatory orders" for operations in different parts of France and Belgium. Some of them involved landings on beaches in support of the debouchment from Normandy; others had to do with the capture of ports in Brittany, the reinforcement of French patriots far in the rear of the enemy positions and the capture of bridges across the Seine. But they did not go beyond careful preparation, because considerations of a strategic or other nature (principally, absence of necessity for the operation in the face of the events that had occurred) did not counsel their being put into practice.

Three gigantic Allied armies, setting out from separate theaters of operation (the east, the south, and the west) advanced continuously, striving to reach the geographical center of the war. Germany became the battle ground of the immediate future.

The most brilliant successes were obtained by the Allied armies in the west. But a serious obstacle stood between them and Berlin—the Siegfried line. Looking at the map page 91, we note to the east of the Siegfried line a second barrier—the Rhine River; and on the north, a series of river obstacles (the Meuse, the Waal or Dutch Rhine, and the Lek or Lower Rhine) to be used defensively to cover the northern flank of the Siegfried line.

At the end of August and the beginning of September 1944, contact was established by the Allies with the Siegfried line. In the north, Belgium was virtually cleared of German forces, and the important port of Antwerp was surrounded. Forces of the Second British Army had crossed the Belgium—Holland frontier in the vicinity of Breda, but were held there.

The situation of the Allies in the west may, therefore, be expressed thus:

A breakthrough of the Siegfried line was a difficult task requiring a concentration of means that could not be brought about in a short time; the first great strategic airborne unit in the history of the world was in reserve; a flank maneuver north of the Siegfried line was a possibility.

The Supreme Allied Command decided on a flank maneuver on the north, to be executed by the 21st Army Group with the First Allied Airborne Army at its disposal. At the same time, pressure was to be maintained on the Siegfried line southward from Aachen.

### The Plan of Operation

With the aim of outflanking the German right flank, General Montgomery decided to attack simultaneously by ground and air, so as:

(a)—To seize, by means of an airborne operation, the successive localities of Eindhoven, Grave, Nijmegen, and Arnhem, to assure the rapid advance of the ground forces; and

(b)—To force a passage through the enemy's defensive position, open a corridor along the route: Valkenswaard — Eindhoven — Grave — Nijmegen — Arnhem, and widen it with armored forces until the Lek river was crossed at Arnhem.

### Distribution of Missions

(*a*)—The airborne operation was in charge of the First Allied Airborne Army. Its forces included the XVIII United States Airborne Corps comprising the 82d United States Airborne Division, the 101st United States Airborne Division, the 1st British Airborne Division, a Polish parachute brigade, and 9th Air Transport Command.

The capture of Eindhoven, and of the Meuse and Waal crossings at Grave and Nijmegen, respectively, were assigned to the XVIII United States Airborne Corps.

The establishment of a bridgehead on the Lower Rhine or the Lek river at Arnhem fell to the 1st British Airborne Division reinforced by the 1st Polish Parachute Brigade.

Means of transportation were limited, and it would not be possible to hurl all the First Allied Airborne Army against its objectives in a single wave, as was counseled by experience in preceding operations. It was necessary, therefore, to establish priority for air transportation. As it would not be possible to achieve 100 per cent success at Arnhem if any of the successive localities south of this city were not taken, the 1st Airborne Division was given last priority. This division was, therefore, to be transported in two waves: the first on D-day and the second on D plus 1. Naturally, this would considerably reduce its strength in the initial attack, but the interpretation of the information of the enemy led to the conclusion that opposition would be weak. This, and the friendly reception expected from the Hollanders were favorable factors which were expected to compensate for the serious disadvantage of division of forces in the attack.

As soon as they were reached by the Second British Army, the large units of the First Airborne Army would come under its control.

(*b*)—The main effort in the ground attack was to fall to the Second British Army which would be covered on the north by the First Canadian Army, charged with the cleaning up of the left flank as far as the sea.

### Execution of the Operation

*The joint operation.*—On 17 September, the ground and airborne operations were launched simultaneously. The air armada crossed the Channel to Holland in broad daylight, thanks to the extraordinary Al-

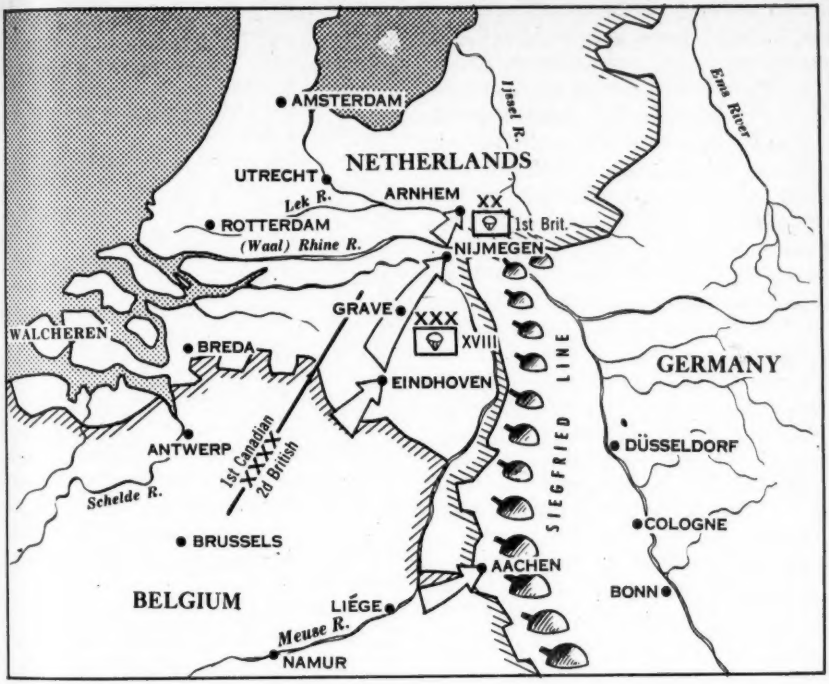
lied air superiority. The planes required two hours for the trip from the coast of England, and were protected by a powerful escort of fighter planes.

Before the operation, Allied aircraft, flying day and night, had softened the enemy ground opposition, destroying more than one hundred enemy antiaircraft positions in the zone of the objectives.

Parachute and glider-borne troops were hurled against their objectives on the ground around noontime, while the Second British Army, breaking into the German positions, exploited the successes without loss of time. The same day, its armored forces entered the city of Valkenswaard and continued on against Eindhoven, throwing out an armored column in search of contact with the American airborne forces. Eindhoven was captured and armored and airborne forces advanced through Vegel, deepening the corridor in the direction of Grave and Nijmegen, desirous of reaching the furthest group at Arnhem where the fighting was becoming harder and more deadly each day.

The American airborne patrols reached the vicinity of the Nijmegen bridge during the night of 17 September, shortly after landing, but lacked the strength to take it. On the following day, they were occupied with the repulse of enemy counterattacks. Meanwhile, the armored point of the Second British Army moved northward, reaching the suburbs of Nijmegen on the 19th in the support of parachute forces faced by Germans strongly entrenched in old Fort Belvedere near the south end of the bridge. They prepared to attack on the following day, Wednesday. While the airborne troops attempted to surprise the Germans on the 20th by crossing the river three kilometers below the bridge in a daylight maneuver to reach the north end of the bridge from the west, the British armored forces opened a passage through the city to reach the United States airborne elements south of the highway bridge. The Germans perceived the outflanking movement and attempted to prevent the crossing with machine-gun and 88-mm fire. Some Germans were transferred from the south to the north side of the Waal river and took up position facing the outflanking movement. Heavy bombers pounded the enemy on the north bank, but did not silence the enemy machine guns. Despite all this, the forces which had crossed the Waal river fought all night, and though suffering heavy losses, captured the north end of the railroad bridge and continued on toward the highway bridge. Meanwhile, British tanks, in cooperation with the American airborne infantry, made ready to attack the area south of the bridge where four German self-propelled guns awaited the appearance of the Allied armor and infantry. Four tanks lined up, one beside the other and, when the signal was given by the Americans on the north end of the highway bridge, the tanks rushed onto the crossing, taking the self-propelled guns under their fire. Thanks to the speed of the maneuver, three of the enemy guns were put out of action and the crew of the fourth fled. It might have been expected that at that instant bridge, tanks and all would have been blown to bits, but a young Dutch lieutenant who had landed by parachute with the Americans, had telephoned to his patriot friends in the city of Nijmegen who had been waiting for just such a moment and had removed the detonators from the explosives.

In this way, the magnificent Nijmegen bridge was taken intact on 21 September. This was of great significance, because the Second British Army, striving to reach Arnhem where the situation was becoming more and more critical would have otherwise been delayed still more.




The Allied troops continued to make a tremendous effort to broaden and deepen the breach in Holland.

It was necessary that the narrow corridor as far as Nijmegen be widened, and British forces took Heeze, crossed the Barle-Duc in Someren on 22 September, and pushed on toward Deurme. On the west side of the salient, they pushed toward Reuzel.

A weak British spearhead made up of light infantry reached the Arnhem area and, crossing the Lek river, established a tenuous contact with their fighters. The tip of the Allied salient was deepened and widened with the capture of Valburg and Elst and an effective contact was sought with the 1st British Airborne Division in Arnhem, but a powerful concentration of tanks and artillery fire stopped the spearpoint about eight kilometers from its objective.

South of the Waal and in the direction of the German frontier, a unit of British mechanized cavalry advanced and reached the town of Cleve, the northern extremity of the Siegfried line.

The reaction of the Germans became more and more violent. They recaptured Elst and, being in possession of the hills northeast of Arnhem, dominated all the extensive plains region. Above all, they rendered it difficult for any large forces to advance astride the fills which were but slightly raised above the surrounding marshy terrain.

The widening of the breach continued south of the Meuse, and Oss and Heesch were taken on the western side of the salient. The situation in the corridor south of the Waal continued practically unchanged in spite of a few small local successes by the Germans in counterattacks. The base of the salient had been widened, but the Lek river could not be quickly reached, and the survivors of the 1st Division could not hold out there more than twenty-four hours longer. The order was given for withdrawal the night of the 25th and 26th.

Americans and British sustained the walls of the corridor against counterattacks while 2,400 survivors of the reinforced 1st British Airborne Division withdrew to a safe position south of the Waal, carrying with them a few of their wounded.

On the west side of the base of the salient, a slight advance was effected, but the Canadians did not pass Turnhout.

With the loss of Arnhem, the Allied flank maneuver became a failure.

### (A)—The Plan of Maneuver

The operation was assigned to the 1st British Airborne Division whose mission was the capture of the Arnhem bridge and the establishment of a bridgehead north of the Lek river.

The plan of maneuver may be thus stated:

(a) —*Landing in two waves.*—
1st wave (17 September):
1st Parachute Brigade.
1st Gliderborne Brigade.
Half the divisional forces.
2nd wave (morning 18 September):
4th Parachute Brigade.
Remainder of divisional forces.
1st Polish Parachute Brigade.

The landing regions were north and west of Wolfhenzen, at a distance varying between eight and thirteen kilometers from the Arnhem bridge, for the 1st Airborne Division; and south of the Lek river, for the Polish brigade.

Two factors were responsible for this choice so far from the main objective of the division: the dense woods on the north side of the Lek river, surrounding areas containing buildings, making it impossible to find landing areas for gliderborne or parachute forces any closer; and the existence of German antiaircraft artillery in the Arnhem area.

(b) *Scheme of maneuver.*—First, capture of the main highway bridge and, if possible, the ponton and railway bridges downstream. After this, the formation of a small perimeter through Arnhem anchoring its flanks on the Lek river, making use of whatever troops should be available.

On the following day, when the remainder of the forces arrived, the establishment of a considerably larger perimeter around Arnhem, including the high ground northwest of the city.

### (B)—Execution of the Plan

Normally, the plan for landing airborne forces consists of seizure of the landing area, or areas, for the gliderborne forces by parachute troops. But in the Arnhem operation, the 1st Gliderborne Brigade arrived first, preceded only by the markers of the 21st Company of Independent Parachute Forces who were charged, as usual, with marking the way for the main body of forces in flight, in order that these might land to their rear.

The trip and the landing were quite successful and the three battalions of the 1st Parachute Brigade as well as the gliderborne infantry landed without serious mis-

hap. The parachute units assembled quickly and began their advance against their objective in the city of Arnhem while gliderborne troops seized possession of the landing areas for the second wave.

As they drew near the village of Oosterbeek, the most advanced elements began to meet strong German opposition. In place of a weak defense, as the Allies had thought, the Germans possessed a strong concentration of troops, almost an army corps, with a large part armored, reorganizing in the vicinity of Arnhem. The 2d Parachute Battalion had gained a passage through to the bridge, which it finally captured, fighting against relatively weak enemy opposition. It removed the explosive charges, and the Arnhem bridge was ready for use by the Second Army which continued to be awaited in its advance toward the north.

As the hours and days passed, the German reaction became more and more violent against the 2d Battalion of Parachute Troops which continued to remain isolated. The 1st and 3d Battalions of its brigade had been engaged in fierce battles in the Beek area since the beginning, suffering heavy losses in their struggle against a force numerically superior to their own and supported by guns and tanks.

While these things were taking place, the gliderborne brigade was holding the landing areas for the second wave, expected by 0900 on 18 September. This wave was held back, however, by bad weather in the airdrome area and did not land till 1600. This seven hour delay caused the loss of precious time. In addition to this, the situation became bad because it was a long way from the center of fighting and advance was difficult since the enemy held the only highway in the axis of advance and use of neighboring highways caused too much dispersion.

In the second wave came the 4th Parachute Troop Brigade, remaining elements of the divisional forces. They did not succeed in concentrating sufficient force for reinforcing the 1st and 3d Parachute Battalions which, on their part, were not able to advance or support the battalion holding the bridge.

In two days of fighting, the 4th Parachute Brigade was reduced to 250 men.

On 21 September, a third wave, consisting of the 1st Polish Parachute Brigade was dropped close to Driel, south of the Lek river. But in spite of efforts on four consecutive nights, they got only 250 men in to the now critical phase of the defense of the perimeter.

Meanwhile the plan for providing supplies by air had gone awry. The dropping area for supplies of food and ammunition fell into enemy hands. Efforts to contact the base by radio and obtain a change in dropping areas were fruitless. Ammunition and food that were so badly needed continued day after day to fall into the hands of the enemy with serious losses of planes brought down by the enemy. Not until later was a very limited amount of supplies received within the limits of the perimeter.

Enemy pressure was steadily increasing, the 2d Battalion on the bridge was suffering heavy punishment, and the remaining battalions of the 1st Parachute Brigade, engaged in attempts to reach the bridge, had been stopped and their forces reduced to but a handful of men; the remainder of the division had been used up in a series of engagements without hope of effecting a junction with the 1st and 3d Battalions or of holding the bridge by joint effort; and the men were hungry and almost without ammunition.

Consequently, the commander of the division decided to assemble the maximum possible number of his elements and form a perimeter on the western edge of Oost-

erbeek, protected on the south by the Lower Rhine. Thus there would remain open a line of contact with the point of the Second Army.

Thanks to a skillful night maneuver, what still remained of the division was joined together to form the perimeter. They were the remnants of the battalions of the 1st Airborne Brigade, of the 4th Parachute Brigade, of the Independent Parachute or "Pathfinder" Company, the few survivors of the 1st and 3d Parachute Battalions, the divisional troops, and the glider pilots who had fought valiantly with their comrades from the moment of landing.

The medical service of the division had performed miracles. Day and night its elements had worked caring for the wounded, largely dispersed and without any hope of being evacuated except through enemy channels. Depots and hospitals had changed hands several times and, without discrimination, were subjected to fire from mortars, tanks and small arms.

When the general recognized the fact that his forces could not hold out twenty-four hours longer, he sent two officers, to inform higher headquarters of the situation. They crossed the Lek, accomplished their mission, and returned in possession of the combined plan of retreat.

The evacuation was effected during the night of 25-26 September, beginning at 2200. With their feet wrapped in strips of blanket to muffle every sound, the troops headed for the bank of the river, leaving a thin defense around the edge of the perimeter. The artillery of the Second Army maintained a strong barrage, which the Germans imagined to be protection for Allied reinforcements crossing the river. Engineers sent by the Second Army awaited the remnants of the division on the north bank of the Lek, to carry them to the south side.

This stage of the withdrawal was carried out before sunrise, and the retreat continued in the direction of Nijmegen where the Arnhem survivors were reorganized. Of the 10,000 men, including pilots and gliderborne troops, 7,605 officers and men were killed, wounded or missing.

### (C)—Lessons

The first lessons to be drawn from this action against Arnhem are: The importance of careful and correct interpretation of information; the need for having at one's disposal at least the entire strength of a division in the initial blow of an airborne operation; the importance of landings being made in the immediate vicinity of the objective; and the infinite value of fighting spirit to the soldier trained for such operations.

### Observations Relative to this Airborne Operation

(I) In the maneuver as planned, there could not have been a better employment of the First Allied Airborne Army. Only a large strategic unit of this nature could effect such a flank maneuver, the seizure of passages over various obstacles, and the opening of a passage for a breakthrough by the ground forces.

(II) Employment of large airborne units in a maneuver, leaving the possibility open for great exploitation, requires meticulous plans based on minute study of the enemy and of the terrain in order that execution may be violent and rapid. It was probably deficient analysis of enemy capabilities that caused the delay in seizing the passage over the Waal at Nijmegen and the subsequent losses of the 1st British Airborne Division at Arnhem.

(III) For the first time, a landing operation was carried out in daylight hours. The decision for a day attack, rendered

possible by air superiority, revealed its great advantages: air observation was considerably aided and the task of maintaining formations was considerably lightened.

(IV) The principle of mass employment was confirmed. Available forces must be employed in a single wave and the employment of large tactical units with a very wide front must be avoided in order not to destroy their cohesion or their capacity for fighting as a single unit. The commander of the 82d Airborne Division revealed in his account, the mistake made in assigning to himself too large a zone for a large unit of this kind, for this leads to dispersion and weakness. A study of what happened to the 1st British Airborne Division shows the weakness which resulted from its being broken down into waves.

(V) The Arnhem episode, and even the delay in the taking of the Nijmegen bridge, confirms the necessity for airborne troops being quickly provided with support.

In spite of the good progress that has been made from the point of view of the weight and diversity of the weapons that can be transported along with airborne troops, a point of equality has not yet been reached with the ground forces that can be hurled against them when these ground forces have had time to assemble and recover from the surprise of the landing. It is, therefore, necessary that airborne forces be supported as soon as possible by friendly ground forces. The main thing is to establish contact with them within a period of a few days, the exact time depending on circumstances but not exceeding from three to five days.

(VI) When judiciously used, airborne forces, due to the surprise they are able to obtain, are capable of accomplishing great successes.

(VII) The help which comes from subsequent waves is so uncertain due to weather conditions that it is advisable not only to employ a single wave, but also to drop with it a considerable quantity of supplies to be used in the establishment of a supply depot.

### Final Conclusions Regarding Joint Operations

The concept of this modern flank maneuver was worthy, and it was carried out in such a way as to obtain great success, but unforeseen factors intervened and the German right was not outflanked.

Further study will, perhaps, uncover the principal cause or causes of the failure of the maneuver, but a study such as the present one can only point out causes which were contributory to the failure: the delay of the Second Army in reaching Nijmegen and the delay on the part of the Americans in obtaining a passage over the Waal; insufficient air transportation equipment, making it impossible for the 1st British Airborne Division and the main part of the supplies to be landed in a single wave on the 17th; unfavorable weather which delayed and diminished the air support both for the force that had landed and the attacking forces of the Second Army; and the impossibility of providing support for the fighters in Arnhem.

Although the maneuver was a failure, the operation brought great advantages; it aided in the maintenance of Allied initiative at a moment when it was dangerous to lose it; and it insured a good salient position in the German flank for subsequent operations.

# Possibilities of Future Warfare

**Translated and digested at the Command and Staff College from an article in Spanish by Lieutenant Colonel Eduardo Prado Castro in "Aeronáutica" (Chile) July 1946.**

## The World Situation Today

THE world today is going through one of its most critical stages. The future of our civilization, with all its development and progress, is at stake. Statesmen, realizing that force will not solve present problems, are striving for development of a mitigating solution that will forever banish misery and destruction from the earth.

Nevertheless, the powers of the world experience a secret distrust which is expressed in parliamentary action and public or secret military measures.

Meanwhile, diplomacy, cunningly and painstakingly, yields on some points and is uncompromising on others for the sole purpose of placing a country in an advantageous and convenient position in case of war.

This is the world situation: 1. Defeated powers have no voice in the solution of problems and most of them have lost even the will to survive.

2. Neutral powers, despite their cultural and historical tradition, have not been consulted and are not admitted to the conferences.

3. The victors, and those countries who contributed to their victory with their assistance and support, have decided to impose their will, although certain profound misunderstandings exist among them.

4. Every day increases the limitless power of the three most powerful nations: United States, England and Russia.

Before the end of World War II, and during its most important phases, statesmen of the three big powers had to solve outstanding strategic problems that endangered their solidarity and victory. After victory was achieved, differences of opinion, methods, common interests, military trends and strategic situations became more critical. The atomic bomb created one of the most crucial problems. A new era had started in which the employment of this destructive means of attack on a large scale would cause the complete annihilation of civilization.

## The Atomic Age

In all modern wars, nations have produced incredible weapons of war apparently decisive in outcome. Sometimes they have achieved complete technical surprise in the development of unknown arms such as the semiautomatic rifle, machine gun, airplane, tank, and poison gas. Sometimes they consisted of a change in tactical procedures; for example, the employment of dive bombers, airborne movements, or motorized units. These innovations produced remarkable effects and changed completely the strategy and tactics of an army. These effects could be decisive in the outcome of a battle or a campaign. However, such advantages last only the time necessary to produce, rehearse or employ a corresponding countermeasure.

We do not intend to study the part these new arms or materials played in the development of the last war during its initial phases. Already many articles have been written about the atomic bomb, its destructive effects, technique of employment, and production.

Nevertheless, the Japanese unconditional surrender was brought about by the lack of air and naval power necessary to stop the violent American offensive. Japan was already licked when the atomic bomb made its appearance. The new

bomb only accelerated the fall of a weakening empire with no will or natural resources to resist the impact of the American war machine. Are we then denying the importance of this development or minimizing the destructive effects of the atomic bomb? No. We agree in part with the opinion of many men that affirm a new era, "The Atomic Age," has begun, but we believe this new era has not yet started.

### Future Warfare

A lapse of twenty-five years separated the two World Wars. One generation has experienced two terrific wars and was convinced at the end of the first that a second would be impossible and would destroy our civilization.

The generals and marshals who participated in the two theaters of operations during World War II also participated as officers in World War I. The statesmen and leaders who fought in the war just ended were also active leaders or soldiers in the first. Did they experience by their own physical and mental suffering all the horrors of war? Did they see with their own eyes the sorrows of a destroyed city, all the wasted treasures and the millions of killed, wounded and crippled men? War struck again despite all these experiences. Why? Because, despite moral, ethical and effective considerations, greed, extravagance and the desire of possession still prevail in human nature.

The time it takes to start a war and determine the probable belligerents, theater of operation, arms and tactics to be used, cannot be estimated. Nevertheless, based on the experiences of the war just ended, it can be said that a future war will be completely technical, and fought mostly in the air, rather than on land or sea. It will envelop the whole world. The future speed of aircraft, its high ceiling, the explosive it can carry, its immense destructive power, will be the main feature of future warfare. Jet propulsion, aircraft, rocket bombs, and atomic energy will make possible the employment of weapons that will travel, without opposition, from the coasts of Europe and Africa to America and vice versa.

It is possible that in a new war there will be no victor or vanquished. All participants will be left in chaos, but there will always be a side that will be in better condition than the other. This side will be the one with the greatest scientific and military men, or one that is in a better position than the rest. But since a future war will be fought in the air, there are already serious discussions over the destructive power to be used—the bomber or guided missile and which would be more advantageous.

We will not discuss this method nor consider the weaknesses and disadvantages of either system of bombing. Bombing with planes is a method so sufficiently tested that it does not need to be defended, and it will always be as effective as it has been until now. In the future, there is no doubt that guided missiles will have a great role for their range will increase at the same time as they are improved.

Rockets will undoubtedly be perfected and their range increased. If atomic energy could be used in these weapons not only could its explosive load be increased but its range could also be greatly increased.

Lastly, these opinions are not only acceptable but possible. A future war, if there is another, will be a technical and air war. Rockets, jet or other planes, the use of atomic energy in supersonic vehicles, improvement in long range location of objects, improvement of radar equipment, or radio guided bombs, are merely

equipment of air war or that use air as a medium of travel.

### Variation in Strategic Concepts

The strategic value of a country or area is determined by the following factors: *a.* Industrial and economic importance and population, or wealth and natural resources; *b.* Location in relation to the world's ground, air and maritime traffic; *c.* Importance of the land, air and sea forces, their training and combat effectiveness; *d.* Territory, climate and peoples; and *e.* International policies.

The role of airpower in World War II greatly changed the concepts formerly held on war. In general outline, they are as follows:

1. Modern warfare, employing air as one of the leading arms, has increased the size of theaters of operation in such a way that they have surpassed national boundaries to include continents. The war of the future will be one between continents.

2. Air warfare will be the principal system of combat in the future. Land and sea armies will exist for a while, with their present organization and fighting system, but the day is not far off when they will be transformed.

3. The side having absolute air supremacy or having the ability to neutralize the enemy's air power, will achieve victory. The attainment of air supremacy, however, will require the development of an advanced air technique, a favorable geographical location, insular possessions or friendly countries that will provide adequate bases for the deployment of air power, and great developments in every field of industrial technique.

The absolute domination of the sea routes between America and her European or Asiatic allies, the union of England and her overseas possessions, were the basic factors that made possible the recent victory of the United Nations. But this union of intercontinental communication was not achieved merely by the sea power of the Anglo-Saxons, although it was far more powerful than that of their enemies, and they used it in a superior manner throughout the war.

Their navies would not have been able to protect their sea traffic if they had not achieved effective control of the air over the ocean, for it was air power that neutralized the submarine menace. The fleet by itself could not have solved this problem, because they could only control the sea lanes and they would have been forced, throughout the greater part of the campaign, to abandon their bases under the pressure of enemy air attacks and go to their farther outposts in the different theaters of operation.

### Ideas and Opinions

Naval power has been reduced to a secondary role. The radius of airpower has increased so rapidly that in the near future it will become an immense conflict instead of the many small encounters which have been fought so far to attain air supremacy throughout the world. The Atlantic and Pacific oceans are small barriers to attack by long range planes. From the seaboards of these two oceans, masses of planes can fly in all directions to attack and bomb objectives and return without the need of intermediate bases. Planes based in the archipelagos or small countries en route will serve to reinforce the mass air attacks or to intercept them, according to their role in the conflict. In the whole world, there will be no nation, capital or industrial center of importance that can consider itself safe from air attack.

### Three Great Air Powers

Two great continental nations, Russia and the United States, and an immense empire, Great Britain, are at present the only countries that possess by themselves the ability to wage an air war, with a clear advantage for the first two. Their enormous territorial extension, the immense possibilities of concentrating their natural resources, their constantly increasing population, their proximity and preponderance over other places of strategic importance in their own continents, give them great advantage over the scattered British Empire.

From a defensive viewpoint, the great territorial extension, its rigorous climate, the concentration of its population and its industries in the great interior, the spreading out of its land communications turn Russia into a great defensive bastion, not very vulnerable to enemy air power, however powerful it might be. In the offensive aspect, these same arguments still hold, besides its proximity to vital centers in Europe, Asia, and Africa, which constitute a potential danger for her.

The extension of level land to the north and center of Europe constitutes for Russia a central position which menaces, not only western Europe, but the countries in the north and south of Europe, and its coastland. From the air bases in the occupied zone of Germany, all of Europe, the western and eastern Mediterranean and a large part of the Atlantic including Iceland, fall within the range of its bombers. This air supremacy is felt still more in the eastern Mediterranean, for, from the metropolitan bases in the Black Sea or the Caucasus, planes can reach, without serious opposition, all of the Near East, Iran, most of the Arabian peninsula, the Red Sea and the Persian Gulf. Against this favorable air position, there is no opposing force except Great Britain. In this zone there are such key points as the Suez Canal, the oil wells in Iraq and Iran and the land, air and sea routes to India and South Africa.

In the wrecked Europe of today, there is only one nation—Great Britain—which is sufficiently strong to be considered as a great military power—an insular nation which up to now possessed a fleet greater than that of any other nation or groups of nations that might oppose it. Its diplomacy has worked with such ability that in modern times it has been able to locate its fleet in such advantageous positions that it has not lost a war, although it has intervened in all of them either as participant or arbiter.

However, the existence of the British Empire can no longer be guaranteed by its fleet for two reasons:

First, because its fleet is no longer the most powerful in the world. The United States Navy is superior to it in tonnage, number of ships of all classes, and, above all, in carriers.

Second, because it is no longer sea power, but air power, that will decide in the future the domination of the seas.

Another powerful nation, the United States, came out of the last world conflict with greatly increased military might. Its great economic power, wealth in industrial products, inexhaustible natural resources, and favorable strategic position, plainly places it in a position to lead the world during the centuries to come. Only a geological phenomenon, or the union of all the other nations against it, can halt the rise of the most powerful governmental organization of the world today. In spite of this, however, there are unforseen reasons, hard to appre-

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ciate in their full magnitude, that force it to maintain a vigilant attitude, preserving a powerful military machine.

In the first place, this is due to the confusion prevailing as a result of the recent conflict. Spiritually, there is no peace, and as long as peace does not take hold, there will be no country that will voluntarily give up its arms. And in the second place, every country has a vulnerable spot.

In the United States, this vulnerable spot is its principal industry, located where nature has placed its main sources of material—iron, coal and oil. This powerful industry is not found in the deep interior of the country, but relatively close to the sea coast; that is to say, it can be attacked by bomber formations flying from the European or Asiatic continent. This same attack can also be launched by new weapons of enormous ranges that can travel the great distances separating America from Europe and Siberia.

If the world is divided in three great zones of influence, corresponding to the three operational nations, it seems that there is nothing left for the smaller nations that still are regarded in the world as sovereign and independent. And this is not so, for two reasons: first, because they cannot still disregard those countries that for their history, tradition, and culture exert an influence; and second, because in spite of all military considerations, from the physical aspect, there is still a factor that is important. It is the geographical location of a nation with respect to the rest of the world.

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# Instruction of Troops in the U.S.S.R. and their Preparation for War

**Translated and digested at the Command and Staff College from a French article by General Niessel in "Revue de Défense Nationale" (France) September 1946.**

IN all countries, efforts are being made to draw all possible lessons from the war which has just ended. Nowhere is this being done with more application than in the U.S.S.R. This work was begun even before the conclusion of hostilities. This matter is of particular interest because the operations of the Soviet army have been divulged in no other source than the Soviet press.

The *Voennaya Misl* (Military Thought), which appears monthly with a circulation of 15,000 copies, is intended for the cadres (commands and staffs) of divisions and large units. It is under the direction of the chief of the general staff for the study of matters pertaining to military theory and ideology, strategic problems, organization of armed forces, combination of the efforts of the different arms, training of the officers, heritage of Russian military leaders, and foreign armies and their war experiences.

The *Voennii Vestnik* (Military Messenger), is intended for officers up to and including the grade of colonel. It appears twice a month with an issue of 50,000 copies, under the direction of the Inspector General of Infantry. In this review are studied the theory and practice of combat, coordination of the efforts of all the arms, military education, tactical training and the employment of fire, organization, tactics, technical matters, and the experiences of foreign armies. This review also deals with the training

and life of officers. Political education occupies a large place in it.

*Krasnaia Zvezda* (Red Star), which is very widely distributed among all military forces, completes the principal publications and deals with the same subjects as the other two. There are few issues of this paper that do not contain several articles dealing with the lessons of the recent war as well as with training. It deals abundantly with political education of the Army. Each number begins with an unsigned editorial of official tone which often deals with preparation for war.

There are, in addition, special arms reviews and numerous periodicals issued by military districts or administrative units. All these publications concur in the impartation of military instruction and the development of the political ideas of the army, which task is especially fulfilled by *Krasnoarmeets* (the Red Army man), published by the Central Political Organization of the Army. We find here opinions on strategic and tactical concepts, methods of military education, political instruction, and maintenance of high morale.

*Strategy and tactics.*—The high command participates actively in this phase of instruction. Articles written by marshals and colonel-generals are frequent. The greater part come from major-generals or officers of field grade but many young officers make their opinions known. The subject most frequently dealt with is offensive combat against a position strongly organized in depth. This leads to discussion of close cooperation between Aviation, Artillery, Armor, and self-propelled antitank guns with Infantry. Contrary to pre-war concepts, the leading role still belongs to the Infantry. Colonel-General Berzarine affirms this emphatically in an article entitled: "Infantry and its Role in Combat." Similar studies have been presented by Colonel-Generals Chanchibadze and Galitski (*Voennii Vestnik*, Nos. 10 and 18).

Many authors state that it is an error to believe that tanks suffice for assuring the breakthrough of an enemy front. The combination, "Infantry and tanks," is often studied in detail, as well as employment of self-propelled antitank or antiaircraft guns which are able (if not prevented by their special missions) to cooperate usefully in artillery support. Tank actions must be powerfully prepared by artillery and aviation and closely accompanied or preceded by infantry. In certain cases, tanks charged with special missions carried groups of infantrymen whose mission was to protect them from the antitank defense of the enemy. Aviation has played a large part in the preparation of attacks, and in breaking up counterattacks. A great deal is also expected of tanks and self-propelled antitank guns held in reserve for this latter purpose.

German Aviation was never completely dominated by the Russians. Both Soviet and German Artillery are agreed in attributing the German defeats at Moscow and Stalingrad to the numerical superiority of the Soviet Artillery. In major attacks, the latter engaged an average of 200 or more guns and mortars per kilometer of front. The mastery of Soviet Artillery in counterbattery action permitted its employing a fourth or more of its guns in direct aimed fire at short ranges. The action of these guns became, at the same time, more rapid, powerful, and economical of ammunition. In this connection, articles by Colonel General Khokhlov (Artillery) and Colonel Professor Nikiforov (*Krasnaia Zvezda*), contain considerable amounts of statistical data on employment of Artillery. For the battle of Berlin, Marshal Zukov had at his disposal

22,000 guns. On the occasion of the recapture of Sevastopol, the Russian Artillery engaged an average of forty-three direct-fire pieces per kilometer of attack front. This role of artillery would be worthy of special study.

Another subject that has often attracted attention is combat in inhabited places. Three such articles have been written by Colonel-Generals Berzarine, Chuikov, and Galitski (*Voennii Vestnik*, Nos. 10, 12, and 18). They bring out the need for artillery reinforcement of assault groups, battalions, companies, and even infantry platoons, to say nothing of the accompanying weapons furnished by the infantry regiments. There have been employed, for this purpose, groups of divisional artillery, self-propelled antitank guns, and even medium caliber artillery firing with direct aim at short range. Of course, tanks and antitank guns participated in these actions. These authors insist on the necessity of a complete mopping up of buildings seized and of maintaining guards over them until it becomes certain that the enemy can no longer return and occupy them again. It is recommended that positions held by the enemy be by-passed whenever possible.

Several articles devoted to the conduct of troops after a deep penetration bring out the point that armor does not obtain decisive results unless accompanied by cavalry or motorized infantry with reconnaissance and effective aerial support. Deep penetrations and pursuit of enemy troops in retreat must lead to the annihilation of the latter.

We should note the abundant equipment of the infantry: heavy machine guns for ground and antiaircraft use, mortars, regimental artillery pieces and antitank guns and rifles. In addition, attack forces have had at their disposal groups of direct support division artillery, placed for given combat operations under the orders of the commander of the operation with the designation of "commander of all arms" (*Voennii Vestnik*, No. 18, 1945). The commander is most frequently the officer in command of the infantry unit to be supported. The support of the artillery was reinforced in the army corps and armies by the addition to large units of powerful artillery formations (brigades and divisions) to which automobile traction or complete motorization had imparted a mobility that permitted rapid concentration at great distances. Artillery command has shown itself to be very flexible, while direct support artillery formations are under the immediate orders of the commander in charge of the execution of a certain combat operation. We observe, thus, the officer in command of the artillery of an infantry regiment having all the direct support artillery temporarily under his orders. On the other hand, the mortars of several infantry regiments have sometimes been placed, during this phase, under the orders of a staff officer of the divisional artillery, as well as all or part of the regimental guns.

Colonel-General Rudenko (Air Force) has, in *Krasnaia Zvezda*, a very interesting series of articles concerning the combined action of aviation with ground forces, based on the needs of the latter rather than the convenience of the Air Forces. He approves the dissatisfaction of ground forces with fighter aviation which should have operated for the benefit of the former. The Soviet fighters were determined to attack the German fighters. But during this time, German bombers inflicted severe losses on Russian troops. The trouble lay in insufficient liaison between the aviation and ground command.

Varied questions are likewise studied. We have found articles relative to combat in wooded, marshy, or rocky areas where combination of arms is difficult to realize; articles on the organization of the German defense and German counterattacks, meeting engagements, combat following landings, hand to hand combat, etc.

On the matter of strategic and tactical instruction, let us call attention to an article by Colonel General Gorodovikov on "Cavalry in Battle" (*Voennii Vestnik*, Nos. 3 and 4). This arm, at the beginning of the war, counted some 200,000 horses distributed among some sixty divisions. While participating in rear guard action, it executed raids against the German rear and provided aid for partisan organizations. Later it took part, in conjunction with armored and motorized forces, in deep penetration movements and the encirclement of German troops which had been outflanked or which were being pursued. According to General Hawkins (American) (*Cavalry Journal*, August 1945), Marshal Zukov declared that one of the causes of the German defeats in Russia was lack of cavalry. Among the most audacious operations of the Soviet Cavalry was the raid of General Sokolov in January 1943, which penetrated 200 kilometers behind the German front, destroying supply bases and large garrisons. Neither snow nor mud was able to stop the cavalry.

*Methods of Training and Instruction.*— Many articles have been devoted to this subject, particularly a number of editorials in *Krasnaia Zvezda* of semi-official tone. Colonel-General Gorbatov occupied himself with the question of training and instruction of the Infantry in an article in *Voennii Vestnik* (No. 21), followed in the same issue by a more detailed article devoted to the same subject by a lieutenant colonel. Colonel-General Gorbatov begins by stating a well known principle: "Troops should learn only what they have need for in war, and only in the manner required in war." He recognizes that there are frequent gaps in the instruction of cadres, especially junior and noncommissioned officers. These result partly from the fact that advancement has been rapid and has not always permitted newly promoted personnel to gain complete knowledge of regulations. But it is also due to the fact that regulations are not sufficiently precise on the formations to be assumed, distances and intervals to be observed and conditions relative to the execution of rushes. We find, as in many of the other studies devoted to methods of training and instruction, a tendency to be schematic in spite of the affirmation that there should be no excessively rigid rules binding the initiative of those putting them into execution. He recognizes how difficult it is in peace-time exercises to get those engaged in them to take the proper account of fire effects. There should be numerous umpires on guard against the development of unlikely situations.

Direction of training and instruction is one of the principal duties of the regimental commander, and he is expected to establish a very detailed program. But matters are not left entirely to him. He must take into consideration the instructions issued by the division, the army corps and the military district. Several articles even advocate the presence of the divisional chief of staff for certain branches of instruction. The establishment of these programs requires an abundance of paper work. The commander must draw up two basic instruments for each period of in-

struction: (a) an "order" for military and political instruction; and (b) a plan for combat training of the regiment.

The "order" for military and political training is composed of two main parts: the results obtained during the preceding period, calling attention to leaders who had obtained the best results and those whose units had not made sufficient progress together with the reasons for these unsatisfactory results; and results to be obtained during the following period, distinguishing between matters of concern to the men, officers, staffs and services.

The plan for military training comprises the following documents: I. Calculation of the hours to be devoted to study and the successive subjects to be dealt with in training all special branches, II. Chronological schedule for combat training, III. Officer group exercises, IV. Subjects in which platoon leaders are to be instructed and trained, V. List of the demonstrations and systematic exercises carried out in the echelon of the regiment, VI. Topic of individual exercises for the personal training of each officer, VII. Organization of exercises to be carried out in the sub-units with means of reinforcement at their disposal, VIII. Plan of surveillance and aid for the sub-units of the regiment, IX. Dispositions for the guard service, the command, and administrative exercises, X. Plan for use of drill grounds, XI. Calculations of ammunition to be employed and the different means to be used in training, XII. Schedule for use of bathing facilities.

Numerous explanations and models follow this long list and it is specified that the battalion commanders shall establish a monthly program from which the company commanders will draw a series of detailed weekly programs. Reviews and inspections, especially by division staffs and superior officers, maintain a check on the results that are being obtained. Lastly, regimental headquarters maintain journals in which are recorded: (a) the tactical progress made by companies; (b) a record of company firing practice; (c) training classes attended by officers; (d) combat practice firing. Battalion and company commanders keep the same records, the first for the companies and the latter for the platoons. In addition to these general studies of methods of training and instruction, we find many articles concerning methods for teaching tactical and technical subjects.

*Military Training and Education of Cadres.*—In 1920, Lenin wrote at the end of the civil war: "Without science, it is impossible to organize a modern army." The complexity of combat, in which the situation is often completely modified, makes it imperative that commanders of all grades be capable of making rapid decisions and of translating them rapidly into clear orders. The desire is that the training of these officers should be complete. Colonel-General Gorbatov in an article on methods of training said that the need for cadres had made it obligatory to appoint men as officers whose general and even military training had not always been adequate.

Advice to officers is packed with methods for self-instruction; increasing intellectual, physical and moral worth; and instructing their subordinates. General officers maintain a supervision over training, and participate in it with their staffs. Advanced training is given in the military academies and technical schools. Trips are prescribed, as well as joint tactical exercises on the map and on the ground for all staffs including regiments, and it is specified that the officers of the services

of the rear are to engage in similar exercises.

Constant and careful study of the regulations must serve as the basis for the development of the personal aptitudes of officers, and this requires a personal effort on their part. They must all carry on studies of a military nature in subjects assigned to them. It is also desired that they should develop their general knowledge. A perfect knowledge of the Russian language is indispensable, for a man's education is judged by the way in which he uses his language. Generalissimo Stalin wrote, it is said: "If a man is not able to express his thoughts with precision, it is because they are incoherent." Much other knowledge is required of an officer: mathematics, general and military history, geography, topography, and knowledge of a technical nature. In addition to this, officers must develop their education by reading along economic, political and even literary and artistic lines.

*Krasnaia Zvezda* often contains information on subjects wholly foreign to military training: economic achievements, conditions in countries occupied by Soviet troops, technical subjects, voyages and exploration. Study of the languages of foreign armies is highly recommended.

The officer, as well as the soldier, must train himself physically by the practice of sports, and especially junior officers must be capable of serving as models for their men. The fact alone of being an officer does not raise one above criticism: officers must always be ready to listen to the observations of their superiors or even their comrades. They must ceaselessly labor to be equal to their task.

"Officers' homes," arranged to permit meetings for purposes of instruction, lectures, discussions of military subjects or subjects of general interest to the officers of the various arms have been established in the garrisons. Their purpose is the strengthening of the bonds of comradeship between officers, facilitating instruction, and raising prestige.

As we examined methods of instruction, we perceived the great emphasis placed on developing in officers a realization of the possibilities of employing arms other than their own. The expression, "officer capable of commanding all arms," recurs frequently. The entire training of officers appears to have this as its aim. Several articles indicate that it is not enough for an officer to have been brave in battle, or even for him to be well educated, but he must be both polished and tactful. It is disgusting to see officers with crude qualities of voice or careless or dirty attire, ignorant of the proper way to conduct themselves at table or toward their comrades or persons outside the army. The officer must not forget that the tendency of the public would be to generalize the bad impression created. A good attitude is even more indispensable in the case of occupational forces outside the limits of the Soviet frontiers.

The desire is to so orientate training and education in the case of student officer schools that young officers will be able to take charge of the tactical training of their men as soon as they reach their regiments. Stress is placed on the necessity of sending students to spend some time in troop formations rather than much time in garrison duty and reviews during the training and education.

It is recommended that very "stiff" training courses be established in the schools. Many articles deal with young officers who have finally reached their troop formations after leaving school, the manner in which commanders and officers

receive these young men, the way they are acquainted with the habits and traditions of the formations, and their orientation on the qualities or weaknesses of the noncommissioned officers that have come under their orders.

Great importance is attached to the training of noncommissioned officers and the retention in the ranks of those who are making the army their career. The desire would be to render them capable of taking the place of 2d Lieutenants. All methods of instruction emphasize this point. In order to increase their prestige, it frequently happens that some of them are mentioned in *Krasnaia Zvezda* for their talent as instructors, or their pictures are printed. "The '*mladchie komandiri*' (junior leaders)," says this journal, "are the backbone of the army. If the noncommissioned officer loves and understands his profession, if he has acquired possession of the experiences of war, who is better able to train and instruct young soldiers more rapidly than he? The noncommissioned officers who continue in the service beyond the termination of a war, are the best men in the army." The Soviet government has granted privileges to them.

Noncommissioned officers and men who serve beyond the legal duration receive the same bonus as the men who are demobilized, and get a sixty-day furlough. Later, they have the right to another furlough every year, to free medical care and to treatment the same as officers. They enjoy the right of preference in attending military schools. They may be given the title of 2d Lieutenant on the condition of having fulfilled for a period of three years the functions of adjutant to a platoon leader, of having exercised for six months the functions of platoon leader and of having passed a special examination. They wear a special uniform and insignia corresponding to their length of service. Their pay has been increased. It increases twenty per cent every three years. They are then allowed a bonus equal to three month's pay. Preference is granted to specialists.

*Political Instruction.*—Members of the army must be Soviet patriots, animated with complete devotion to the government and well prepared politically to fulfill this role. Officers must be tireless in their efforts to achieve this end to say nothing of the work of the political organizations which exist among the troops and the general organization of the communist party. Many hours are devoted to the political education of troop officers through the instrumentality of lectures and discussions of points of doctrine. We have noted the importance attached to the retention in the ranks of noncommissioned officers and men serving beyond the legal duration. It is specified, however, in an article in *Krasnaia Zvezda* that only members of the *Komsomol* (Young Communists) are to be admitted for service under these conditions.

This publication gives, daily, many news items relative to conditions in foreign countries written in a manner favorable to the policies of the U.S.S.R. The speeches of the principal political leaders are widely publicized. The name of Generalissimo Stalin is mentioned in all articles as that of the enlightened author of all measures relative to organization and command which permitted the winning of the war, by virtue of their being based on the spirit of the doctrines of Marx and Lenin. Between the weeks that intervened between the proclamation of the new Soviet constitution and the elections, *Krasnaia Zvezda* presented a daily account of the election campaigns, called attention to meetings held for the presentation of the principal candidates and published for each district the name of the sole candidate that

had been designated and who, consequently, was elected with almost complete unanimity. The most numerous and enthusiastic of the reports had to do with the candidacy of Generalissimo Stalin in one of the districts of Moscow and those of the Soviet Government. Much space was accorded the principal chiefs of the army who were, generally speaking, admitted as candidates in their native sections, the section containing the population that had furnished the troops under their orders or in a region where they were particularly well known.

*Maintenance of the Army's Morale.*— Great attention is given to the maintenance of army morale. The evocation of the military traditions of the old Russian army, of the memory of Suvarov and Kutusof, recalls former glories of which the present generation must show itself the worthy heir. The successes of the Red Army during the years of the civil war, the great victories of World War II are extolled. Decorations and medals are widely distributed. *Krasnaia Zvezda* publishes in almost every number names and pictures of officers, noncommissioned officers and men who have distinguished themselves. Certain exploits win for their authors the title of "Hero of the Soviet Union," and this title may be acquired a number of times. Certain conditions permit a soldier or a unit being designated as "of the guard." These individuals or units are proud of their traditions and guard them carefully. Special honors are accorded the parents of certain soldiers who have died on the field of honor. In some units, pains are taken to write to the parents of those who have obtained recompenses for the purpose of announcing to them the good news.

The Soviet government maintains this attitude through honorific, political and material advantages widely granted to personnel of the cadres (particularly the members of the high command), and through intense propaganda efforts. The vast population of the U.S.S.R. renders the problem of recruiting an easy one. Although it is composed of numerous races which differ in language, customs, and manners, the army is rendered homogeneous by means of its close bond with the communist party and the use of Russian as the language of command and service. It will constitute, therefore, in the future, as in the struggle which has just come to an end, a decisive factor on which the foreign policy of the U.S.S.R. plans firmly to depend.

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# The Future of Armored Warfare

**Translated and digested at the Command and Staff College from an article in Spanish by Lieutenant Colonel Gonzola D. de la Lastra, in "Ejército" (Spain) September 1946.**

In this article I will consider two countries only: France and the United States. In selecting the first one, my attention was drawn to the fact that the French have greatly criticized their own poor vision on the possibilities of armor. The second country I have selected because of its great experience acquired in the constant employment of armored units.

Before I go into the subject matter itself I wish to state:

1. In spite of the atomic bomb, the importance and effectiveness of which no one doubts, all nations are dedicating their at-

tention to the reorganization of their armies. Thus, we see how the United Nations Organization itself is studying the organization of its future army, of which the only thing we know is that it will have about two million men; and:

2. Even though we ignore the definite organization of this army, we can be sure that tanks will be found in the new army in the proportion that experience dictates.

### France

The French tank division has been the object of much comment from the point of view of the units that make it up as well as the way it was employed on the field of battle. In the Battle of France (May 1940) the French Army had the following armored units:

| | |
|---|---|
| 3 Mechanized Divisions (12 battalions) | 600 tanks |
| 4 Armored Divisions (14 battalions) | 546 tanks |
| 27 Separate Battalions | 1215 tanks |
| Old Tanks | 600 tanks |
| Total | 2961 tanks |

These were only the units found on the northwestern front. It also had, in the rest of France and the colonies, the following units:

| | |
|---|---|
| In France: | |
| One mechanized division | 300 tanks |
| Miscellaneous units and parking pools | 284 tanks |
| Africa and Levant: | |
| 5 Battalions | 250 tanks |
| Total | 834 tanks |

In grand total France had 3795 tanks.

Can it truly be said that France did not have a clear vision of the problem in formulating its plans for the building of tanks? France knew the importance that armor whould have in the near future and it also knew the construction program and units available "on the other side of the Maginot Line." This is why its perserverance and vision of the problem allowed it to have, in spite of the "fifth column policies of the country," an acceptable number of tanks, even though they had not been provided for before hand.

France had initially, therefore, an acceptable number of tanks which were augmented by British units. But in spite of this, they did not produce the desired results. Why? According to authorized reports it was due principally to the fact that they were not used as had been contemplated. In spite of this confession, let us examine their "doctrine" for the employment of armor, to see if we can find a fundamental error that might have contributed to the final result.

At the beginning of the war in 1939, French doctrine recognized two forms of employing tanks: 1. In close support, and, 2. In joint action.

### In Close Support

The French General Staff could not foresee any battle in which—if the terrain allowed it—infantry would be found fighting without being preceded or supported by the fire of tanks.

As a result of this idea, and since tanks would always be protected by the antitank weapons of the infantry and by all of the artillery, the need of a special model of tanks for close support, was felt. The general characteristics of this tank were as follows:

Armament: One 37-mm cannon and a machine gun.

Armor: 40-mm.

Maximum weight: twelve tons.

An essential characteristic required was that the tank not be too bulky, for it protected itself mainly by seeking cover in the terrain, since speed at that time was very

limited. In 1939, when the technique of rapid and long advances of tanks had not been developed, and antitank weapons and means had not been developed to the point they are now it was admissible to have a tank built that would advance at the same rate as infantry. Today this idea is no longer admissible, because the characteristics of the modern tank have improved greatly with corresponding increase in weight and volume. Besides, it is no longer useful or effective to subordinate the rate of advance of tanks to that of the infantry.

During the Spanish civil war, in which tanks generally fought in close support, their rate of advance was not fixed by the infantry, but they advanced rapidly to the objectives previously assigned.

### Joint Action

In discussing this topic, it is fair to point out the mistake made by the majority of those that have considered the French policy on armor.

It has been said frequently that the French High Command did not favor the organization and use of large armored units. The number of tanks previously quoted demonstrate that such a contention is in error. Besides, it should be pointed out that in 1935 it had already been decided to transform the eight mechanized divisions into tank divisions. The organization of an armored corps had also been provided. This corps was intended to have powerful artillery support.

Let us examine what means were needed to execute those missions that required joint action. Organically there were two types of units: 1. Mechanized Divisions, and 2. Armored Divisions.

The mechanized divisions were conceived and organized along the same lines as the panzer divisions. Their missions were those normally assigned the cavalry. In terrain without fortifications, tanks would advance in front of the army, or in the gaps if there were any, but they would specially be used in the exploitation of a breakthrough.

These divisions, at first, were to have only armored reconnaissance cars with machine guns, drivers and accompanying personnel. Their equipment was gradually changed, a small group of tanks was assigned, and at the end, each division had 200 tanks exclusive of the armored reconnaissance cars.

Their organic equipment made it possible for them to fulfill the missions assigned to them, and if one remembers the powerful general reserve artillery France had, including motorized regiments, it is easily understandable that they were considered "ready" for combat.

Armored divisions were the units organized to fight even in terrain that had permanent fortifications. In accordance with their conception, there was a "heaviness" in their organization. What they gained in fire power did not compensate for the maneuverability they lost, and as the technique then employed did not allow for rapid advances, they became vulnerable and not very effective.

A grave mistake that some professionals still commit is to think that tank units make a permanent breakthrough on a permanent front. Neither the Germans nor the French tried to break through the Maginot or Siegfried lines with their tanks, and it should also be pointed out that neither did the Americans try to break through the Siegfried line with their armored units in 1945.

The main characteristic of the contemplated French Armored Division is its neat tactical and strategic maneuverability which, together with great fire power and abundant communications, make it feasible for the unit to fulfill its missions. The

American doctrine is substantially the same. Tanks have the main role in an armored division in combat, while the rest of the equipment has the mission to prepare, support and exploit the breakthrough.

### United States

When the United States entered the war, its doctrine on the employment of tank units had assimilated the teachings learned in Europe. The main characteristic of its mission was to penetrate deeply into enemy defenses.

### Tunisian Campaign

This campaign confirmed the necessity of infantry supporting tanks, broadening its previous conception that merely made reference to liaison.

Actually this was nothing new, because the intimate cooperation between infantry and tanks had already been admitted. But it should be re-emphasized, that without support of the infantry, attacks of tanks are ineffective.

Until the last phases of the African campaign, the only armored division that took part was not employed as a unit. It was realized, however, that to divide up the armored units was ineffective.

### Italian Campaign

The terrain determines everything, and as a result of its nature, combat teams—often small—were frequently used, made up of infantry, artillery, tanks and tank destroyers as basic combat elements. These had such success that the United States Army considered them the key to their success.

In summary, nothing new was obtained out of this campaign, except the employment of these combat teams. Even though they seem to establish norms contrary to those previously accepted, the combat teams were only a phase of the close support missions already known, with the advantage that they were not hurriedly organized.

### French Campaign (Prior to the German Counteroffensive)

A study of combat reports creates the impression that the employment of tanks did not follow any preconceived or established doctrine. But if we consider the experience gained in successive campaigns, we must admit that the apparent lack of doctrine is nothing but an adaptation to the various situations that presented themselves.

As general principles, the following are worthy of mention: (1) Combat of tanks versus tanks were almost eliminated, and (2) The importance of the terrain is again pointed out, stressing the limitations it imposes.

### Evolution of Armored Units

In the evolution of armored units, the following modifications should be pointed out:

*a. Attack echelon.*—The regiment was done away with as a tank unit. The battalions are similar to separate battalions or those used in general reserve and as a result they can be assigned as a part of an armored division, or to support a normal division.

*b. Support echelon.*—The original infantry regiment was transformed into three independent battalions with reconnaissance cars, grouped to form a combat command. The modifications made in this echelon seem to be due to the necessity of grouping units that are able to complete and consolidate the successes achieved by the attacking echelon.

*c. Service echelon.*—Since the tank and armored infantry battalions have their own supply units, the quartermaster battalion has been eliminated.

### Construction

The light tank seems to be disappearing and at present it is only being used by the airborne forces. The medium tank will constitute the central nucleus of these units. Various arms will be placed on tank chassis for fulfillment of special missions, but they should not be confused with real tanks.

### Organization

There seems to be a definite trend toward organization of separate battalions. Their mission will be the same regardless of whether they form part of armored divisions or not. Tank battalions have all the means necessary to give them complete autonomy.

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## Some Principles Applicable to Cavalry Organizations

**Translated and digested at the Command and Staff College from an article by Colonel Samuel Correa B., in "Revista de Caballería" (Chile) July-August 1946.**

WE have seen that in a modern army it is important to have an efficient cavalry. The war recently ended has left a series of lessons which we should not overlook. One of these is that the fighting capacity of each arm is, today, with even greater force than before, closely linked to a wise combination of all arms.

As a result, infantry as well as cavalry, should have learned a common lesson. Both should combine weapons of all types and calibers, each within its prescribed field of action and employment in battle, and in full agreement with its special characteristics.

This combination of arms should not be the arbitrary formation of a group. It is not subordinating one arm to a new one without the existence of an organic necessity that justifies it. On the contrary, it is due to a logical distribution of the means, which, in order for a particular arm to fulfill its mission, have to be placed at the disposal of each echelon of command.

The effect produced by the rapid and essentially motorized action of the German forces in their breakthrough in Belgium and France caused many professional soldiers to believe, at least momentarily, that these forces doomed the infantry and, in a more direct way, the cavalry. For it was thought that this nucleus of armor supported by powerful aviation, became the basic and fundamental element in combat. As a result, it seemed that infantry had decreased in importance, and cavalry felt the blow still more severely.

But this first phase of the war took place in exceptionally favorable terrain for armored warfare, and only later when the war was fought in the mountainous terrain of Italy, in Russia, and especially in the jungles of the South Pacific, was it shown that the employment of tanks and vehicles was limited in maneuver by the terrain.

In the first phase of the war, cavalry was used as a part of some armies, the Polish Army for example. But the rapid armored units of the Germans faced a cavalry that was not equipped nor trained to face them. The cavalry organization was so deficient that its employment in missions which it could not accomplish was neither logical nor feasible. The cav-

alry lacked the means to neutralize the armored power of the enemy. Perhaps the high command, knowing the courage and bravery of the cavalry, sacrificed it in the hope that it could save them from the hopeless situation they were in.

During the second phase of the war, this traditional arm momentarily placed in a secondary role, was missing. It had been temporarily replaced by armor. It was proved especially in the campaigns of Italy, France and Russia, that a well trained cavalry, with great maneuverability and modern equipment, could have rendered valuable service. No other arm was in a position to replace it. Besides, due to its great mobility, the cavalry constitutes a powerful support to the high command. It finds no obstacles in difficult terrain such as might hinder the movement of armor. Bad roads, mountainous terrain or swamps produced by rains do not constitute a serious obstacle for the cavalry.

The cavalry should therefore be organized up to brigades and divisions with a combination of light and heavy weapons, and antiaircraft and antitank weapons that will place it in a position to act efficiently in any terrain and counteract any possible maneuver.

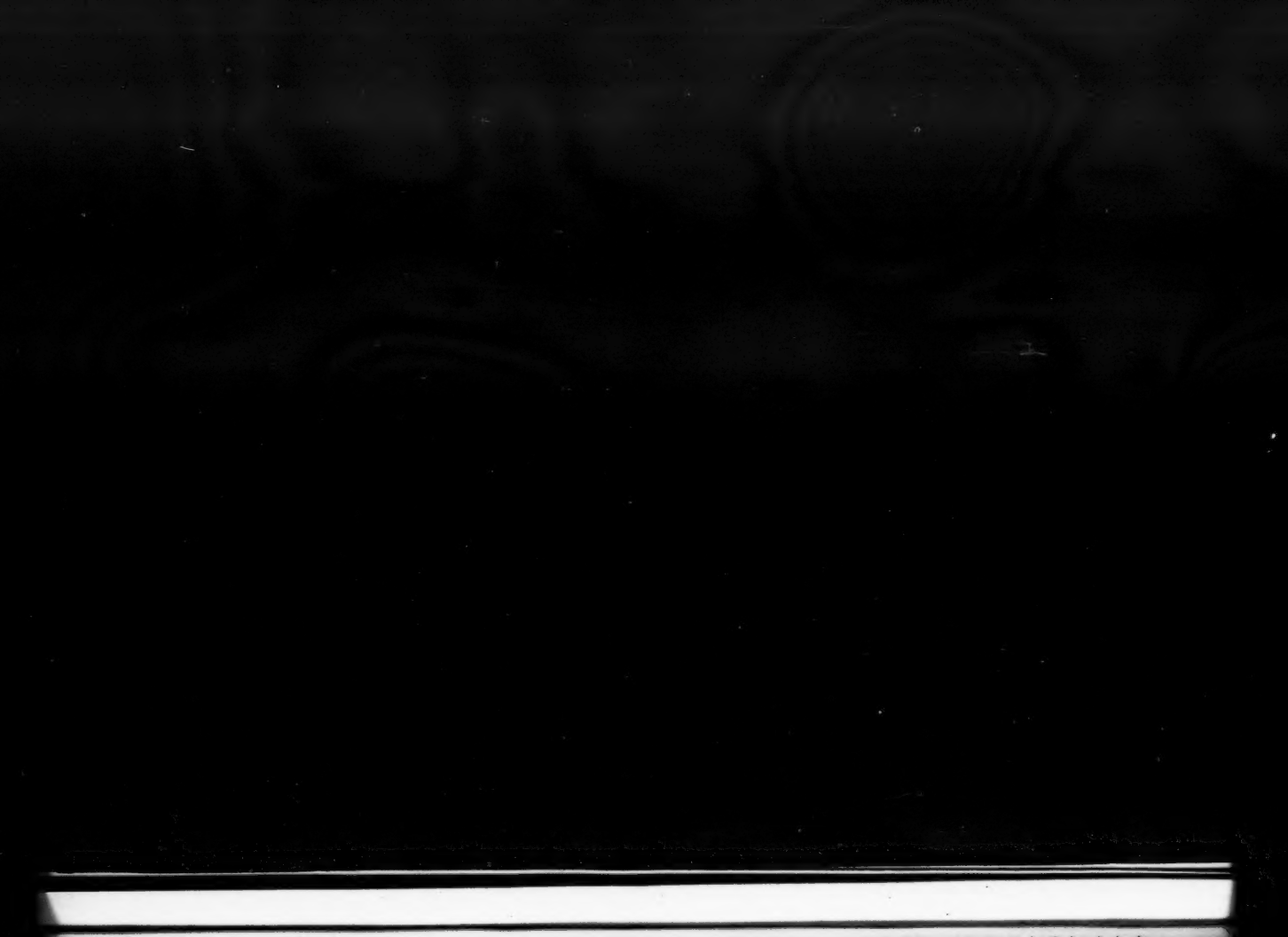
In order that the cavalry be able to maintain or increase its maneuverability, it is advisable to motorize its supply and services. This is what happened to the limited cavalry that was organized rather hurriedly on some fronts, and to the powerful cavalry units the Russians already had. The latter, reinforced with reconnaissance cars, was recognized as a powerful grouping of forces in the most important phases of the war.

It is clear, therefore, that modern cavalry must adapt itself to new exigencies. It must modify its organization with armor and antitank weapons into definite organic tactical units as circumstances and terrain require. Thus it is capable of using its natural maneuverability within its field of endeavor.

As previously explained, both infantry and cavalry emerge united in a common effort. Both have acquired greater maneuverability. The cavalry which already possessed this characteristic must increase it, not so much because it might be left behind in this age of rapidity, but as a necessity for fulfilling its mission.

To consider the new organization of the cavalry, we should first of all place ourselves on a realistic plane, taking into account the possibility of employing this arm under the best and most advantageous conditions.

We should not consider destroying what has been accomplished merely because we like to present ourselves in favor of something new. Neither should we try to amend or patch up something that has to be altered radically.

All study in the organization of the various arms should be based on a series of factors. The most fundamental is the knowledge that we might have of the future employment of an arm within an integral unit, such as an army. In respect to the cavalry, we all know the delicate missions that it is required to fulfill before battle, in battle, and after the battle.

Aside from this factor of "future employment," we should consider another factor or principle that is seldom considered in organizational studies. It is "unitation." This rarely perceived principle is extremely important for one who seriously desires changes in the organic structure of an arm. The cavalry, like every other arm, has a responsibility to maintain and fulfill the principle of securing and defending. All this indicates that the division should be its major unit, contrary to what many believe. This is the way other countries have conceived it in the organization of their armies.